

SEQUENCE LISTING

<110> Funahashi, Shin-ichi
Miyata, Shoji

<120> PROTEIN HAVING PDZ DOMAIN SEQUENCE

<130> 06501/056001

<140> US 09/502,698
<141> 2000-02-11

<150> PCT/JP98/03603
<151> 1998-08-12

<150> JP 10/189944
<151> 1998-06-19

<150> JP 09/230356
<151> 1997-08-12

<160> 93

<170> FastSEQ for Windows Version 4.0

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<211> 1373

<212> PRT

<213> Homo sapiens

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 35 40 45
 Ala Met Thr Asp Ala Gly Gln Ser Thr Glu Glu Val Gln Ala Pro Leu
 50 55 60
 Ala Met Trp Glu Ala Gly Ile Gln His Ile Glu Leu Glu Lys Gly Ser
 65 70 75 80
 Lys Gly Leu Gly Phe Ser Ile Leu Asp Tyr Gln Asp Pro Ile Asp Pro
 85 90 95
 Ala Ser Thr Val Ile Ile Ile Arg Ser Leu Val Pro Gly Gly Ile Ala
 100 105 110
 Glu Lys Asp Gly Arg Leu Leu Pro Gly Asp Arg Leu Met Phe Val Asn
 115 120 125
 Asp Val Asn Leu Glu Asn Ser Ser Leu Glu Glu Ala Val Glu Ala Leu
 130 135 140
 Lys Gly Ala Pro Ser Gly Thr Val Arg Ile Gly Val Ala Lys Pro Leu
 145 150 155 160
 Pro Leu Ser Pro Glu Glu Gly Tyr Val Ser Ala Lys Glu Asp Ser Phe
 165 170 175
 Leu Tyr Pro Pro His Ser Cys Glu Glu Ala Gly Leu Ala Asp Lys Pro
 180 185 190
 Leu Phe Arg Ala Asp Leu Ala Leu Val Gly Thr Asn Asp Ala Asp Leu
 195 200 205
 Val Asp Glu Ser Thr Phe Glu Ser Pro Tyr Ser Pro Glu Asn Asp Ser
 210 215 220
 Ile Tyr Ser Thr Gln Ala Ser Ile Leu Ser Leu His Gly Ser Ser Cys
 225 230 235 240



Gly Asp Gly Leu Asn Tyr Gly Ser Ser Leu Pro Ser Ser Pro Pro Lys
 245 250 255
 Asp Val Ile Glu Asn Ser Cys Asp Pro Val Leu Asp Leu His Met Ser
 260 265 270
 Leu Glu Glu Leu Tyr Thr Gln Asn Leu Leu Glu Arg Gln Asp Glu Asn
 275 280 285
 Thr Pro Ser Val Asp Ile Ser Met Gly Pro Ala Ser Gly Phe Thr Ile
 290 295 300
 Asn Asp Tyr Thr Pro Ala Asn Ala Ile Glu Gln Gln Tyr Glu Cys Glu
 305 310 315 320
 Asn Thr Ile Val Trp Thr Glu Ser His Leu Pro Ser Glu Val Ile Ser
 325 330 335
 Ser Ala Glu Leu Pro Ser Val Leu Pro Asp Ser Ala Gly Lys Gly Ser
 340 345 350
 Glu His Leu Leu Glu Gln Ser Ser Leu Ala Cys Asn Ala Glu Cys Val
 355 360 365
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 370 375 380
 Ala Lys Gly Asn Ser Ser Leu Gly Met Thr Val Ser Ala Asn Lys Asp
 385 390 395 400
 Gly Leu Gly Met Ile Val Arg Ser Ile Ile His Gly Gly Ala Ile Ser
 405 410 415
 Arg Asp Gly Arg Ile Ala Ile Gly Asp Cys Ile Leu Ser Ile Asn Glu
 420 425 430
 Glu Ser Thr Ile Ser Val Thr Asn Ala Gln Ala Arg Ala Met Leu Arg
 435 440 445
 Arg His Ser Leu Ile Gly Pro Asp Ile Lys Ile Thr Tyr Val Pro Ala
 450 455 460
 Glu His Leu Glu Glu Phe Lys Ile Ser Leu Gly Gln Gln Ser Gly Arg
 465 470 475 480
 Val Met Ala Leu Asp Ile Phe Ser Ser Tyr Thr Gly Arg Asp Ile Pro
 485 490 495
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 Arg Glu Pro Ser Lys Ser Leu Gly Ile Ser Ile Val Gly Gly Arg Gly
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 Lys His Val Leu Glu Asp Ser Pro Ala Gly Lys Asn Gly Thr Leu Lys
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 Pro Gly Asp Arg Ile Val Glu Ala Pro Ser Gln Ser Glu Ser Glu Pro
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 Glu Lys Ala Pro Leu Cys Ser Val Pro Pro Pro Pro Pro Ser Ala Phe
 595 600 605
 Ala Glu Met Gly Ser Asp His Thr Gln Ser Ser Ala Ser Lys Ile Ser
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 Gln Asp Val Asp Lys Glu Asp Glu Phe Gly Tyr Ser Trp Lys Asn Ile
 625 630 635 640
 Arg Glu Arg Tyr Gly Thr Leu Thr Gly Glu Leu His Met Ile Glu Leu
 645 650 655
 Glu Lys Gly His Ser Gly Leu Gly Leu Ser Leu Ala Gly Asn Lys Asp
 660 665 670
 Arg Ser Arg Met Ser Val Phe Ile Val Gly Ile Asp Pro Asn Gly Ala
 675 680 685
 Ala Gly Lys Asp Gly Arg Leu Gln Ile Ala Asp Glu Leu Leu Glu Ile
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 Asn Gly Gln Ile Leu Tyr Gly Arg Ser His Gln Asn Ala Ser Ser Ile
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 755 760 765
 Val Thr Thr Ser Asp Ala Ala Val Asp Leu Ser Ser Phe Lys Asn Val
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 Gln His Leu Glu Leu Pro Lys Asp Gln Gly Gly Leu Gly Ile Ala Ile
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 His Gly Val Ala Ala Thr Asp Gly Arg Leu Lys Val Gly Asp Gln Ile
 820 825 830
 Leu Ala Val Asp Asp Glu Ile Val Val Gly Tyr Pro Ile Glu Lys Phe
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 Ile Ser Leu Leu Lys Thr Ala Lys Met Thr Val Lys Leu Thr Ile His
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 Ser Gly Glu Lys Lys Asn Ser Ser Gln Ser Leu Met Val Pro Gln Ser
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 Gly Ser Pro Glu Pro Glu Ser Ile Arg Asn Thr Ser Arg Ser Ser Thr
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 930 935 940
 Ser Ile Val Gly Gly Ser Asp Thr Leu Leu Gly Ala Phe Ile Ile His
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 Glu Val Tyr Glu Glu Gly Ala Ala Cys Lys Asp Gly Arg Leu Trp Ala
 965 970 975
 Gly Asp Gln Ile Leu Glu Val Asn Gly Ile Asp Leu Arg Lys Ala Thr
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 His Asp Glu Ala Ile Asn Val Leu Arg Gln Thr Pro Gln Arg Val Arg
 995 1000 1005
 Leu Thr Leu Tyr Arg Asp Glu Ala Pro Tyr Lys Glu Glu Glu Val Cys
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 Leu Ser Ile Val Gly Lys Arg Asn Asp Thr Gly Val Phe Val Ser Asp
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 1090 1095 1100
 Glu Val Gly Arg Ile Lys Ala Gly Pro Phe His Ser Glu Arg Arg Pro
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 Ser Gln Thr Ser Gln Val Ser Glu Gly Ser Leu Ser Ser Phe Thr Phe
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 Pro Leu Ser Gly Ser Ser Thr Ser Glu Ser Leu Glu Ser Ser Ser Lys
 1140 1145 1150
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 1155 1160 1165
 Lys Lys Gly Pro Thr Asp Ser Leu Gly Ile Ser Ile Ala Gly Gly Val
 1170 1175 1180
 Gly Ser Pro Leu Gly Asp Val Pro Ile Phe Ile Ala Met Met His Pro
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 Thr Gly Val Ala Ala Gln Thr Gln Lys Leu Arg Val Gly Asp Arg Ile
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 Val Thr Ile Cys Gly Thr Ser Thr Glu Gly Met Thr His Thr Gln Ala
 1220 1225 1230

Val Asn Leu Leu Lys Asn Ala Ser Gly Ser Ile Glu Met Gln Val Val
 1235 1240 1245
 Ala Gly Gly Asp Val Ser Val Val Thr Gly His His Gln Glu Pro Ala
 1250 1255 1260
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 Asp Asp Leu Gly Pro Pro Gln Cys Lys Ser Ile Thr Leu Glu Arg Gly
 1285 1290 1295
 Pro Asp Gly Leu Gly Phe Ser Ile Val Gly Gly Tyr Gly Ser Pro His
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 Gly Asp Leu Pro Ile Tyr Val Lys Thr Val Phe Ala Lys Gly Ala Ala
 1315 1320 1325
 Ser Glu Asp Gly Arg Leu Lys Arg Gly Asp Gln Ile Ile Ala Val Asn
 1330 1335 1340
 Gly Gln Ser Leu Glu Gly Val Thr His Glu Glu Ala Val Ala Ile Leu
 1345 1350 1355 1360
 Lys Arg Thr Lys Gly Thr Val Thr Leu Met Val Leu Ser
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<210> 2

<211> 1005

<212> PRT

<213> Homo sapiens

<400> 2

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 35 40 45
 Arg Asp Gly Arg Ile Ala Ile Gly Asp Cys Ile Leu Ser Ile Asn Glu
 50 55 60
 Glu Ser Thr Ile Ser Val Thr Asn Ala Gln Ala Arg Ala Met Leu Arg
 65 70 75 80
 Arg His Ser Leu Ile Gly Pro Asp Ile Lys Ile Thr Tyr Val Pro Ala
 85 90 95
 Glu His Leu Glu Glu Phe Lys Ile Ser Leu Gly Gln Gln Ser Gly Arg
 100 105 110
 Val Met Ala Leu Asp Ile Phe Ser Ser Tyr Thr Gly Arg Asp Ile Pro
 115 120 125
 Glu Leu Pro Glu Arg Glu Glu Gly Glu Gly Glu Ser Glu Leu Gln
 130 135 140
 Asn Thr Ala Tyr Ser Asn Trp Asn Gln Pro Arg Arg Val Glu Leu Trp
 145 150 155 160
 Arg Glu Pro Ser Lys Ser Leu Gly Ile Ser Ile Val Gly Arg Gly
 165 170 175
 Met Gly Ser Arg Leu Ser Asn Gly Glu Val Met Arg Gly Ile Phe Ile
 180 185 190
 Lys His Val Leu Glu Asp Ser Pro Ala Gly Lys Asn Gly Thr Leu Lys
 195 200 205
 Pro Gly Asp Arg Ile Val Glu Ala Pro Ser Gln Ser Glu Ser Glu Pro
 210 215 220
 Glu Lys Ala Pro Leu Cys Ser Val Pro Pro Pro Pro Ser Ala Phe
 225 230 235 240
 Ala Glu Met Gly Ser Asp His Thr Gln Ser Ser Ala Ser Lys Ile Ser
 245 250 255
 Gln Asp Val Asp Lys Glu Asp Glu Phe Gly Tyr Ser Trp Lys Asn Ile
 260 265 270
 Arg Glu Arg Tyr Gly Thr Leu Thr Gly Glu Leu His Met Ile Glu Leu
 275 280 285

Glu Lys Gly His Ser Gly Leu Gly Leu Ser Leu Ala Gly Asn Lys Asp
 290 295 300
 Arg Ser Arg Met Ser Val Phe Ile Val Gly Ile Asp Pro Asn Gly Ala
 305 310 315 320
 Ala Gly Lys Asp Gly Arg Leu Gln Ile Ala Asp Glu Leu Leu Glu Ile
 325 330 335
 Asn Gly Gln Ile Leu Tyr Gly Arg Ser His Gln Asn Ala Ser Ser Ile
 340 345 350
 Ile Lys Cys Ala Pro Ser Lys Val Lys Ile Ile Phe Ile Arg Asn Lys
 355 360 365
 Asp Ala Val Asn Gln Met Ala Val Cys Pro Gly Asn Ala Val Glu Pro
 370 375 380
 Leu Pro Ser Asn Ser Glu Asn Leu Gln Asn Lys Glu Thr Glu Pro Thr
 385 390 395 400
 Val Thr Thr Ser Asp Ala Ala Val Asp Leu Ser Ser Phe Lys Asn Val
 405 410 415
 Gln His Leu Glu Leu Pro Lys Asp Gln Gly Gly Leu Gly Ile Ala Ile
 420 425 430
 Ser Glu Glu Asp Thr Leu Ser Gly Val Ile Ile Lys Ser Leu Thr Glu
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 His Gly Val Ala Ala Thr Asp Gly Arg Leu Lys Val Gly Asp Gln Ile
 450 455 460
 Leu Ala Val Asp Asp Glu Ile Val Val Gly Tyr Pro Ile Glu Lys Phe
 465 470 475 480
 Ile Ser Leu Leu Lys Thr Ala Lys Met Thr Val Lys Leu Thr Ile His
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 Ala Glu Asn Pro Asp Ser Gln Ala Val Pro Ser Ala Ala Gly Ala Ala
 500 505 510
 Ser Gly Glu Lys Lys Asn Ser Ser Gln Ser Leu Met Val Pro Gln Ser
 515 520 525
 Gly Ser Pro Glu Pro Glu Ser Ile Arg Asn Thr Ser Arg Ser Ser Thr
 530 535 540
 Pro Ala Ile Phe Ala Ser Asp Pro Ala Thr Cys Pro Ile Ile Pro Gly
 545 550 555 560
 Cys Glu Thr Thr Ile Glu Ile Ser Lys Gly Arg Thr Gly Leu Gly Leu
 565 570 575
 Ser Ile Val Gly Gly Ser Asp Thr Leu Leu Gly Ala Phe Ile Ile His
 580 585 590
 Glu Val Tyr Glu Glu Gly Ala Ala Cys Lys Asp Gly Arg Leu Trp Ala
 595 600 605
 Gly Asp Gln Ile Leu Glu Val Asn Gly Ile Asp Leu Arg Lys Ala Thr
 610 615 620
 His Asp Glu Ala Ile Asn Val Leu Arg Gln Thr Pro Gln Arg Val Arg
 625 630 635 640
 Leu Thr Leu Tyr Arg Asp Glu Ala Pro Tyr Lys Glu Glu Val Cys
 645 650 655
 Asp Thr Leu Thr Ile Glu Leu Gln Lys Lys Pro Gly Lys Gly Leu Gly
 660 665 670
 Leu Ser Ile Val Gly Lys Arg Asn Asp Thr Gly Val Phe Val Ser Asp
 675 680 685
 Ile Val Lys Gly Gly Ile Ala Asp Pro Asp Gly Arg Leu Ile Gln Gly
 690 695 700
 Asp Gln Ile Leu Leu Val Asn Gly Glu Asp Val Arg Asn Ala Ser Gln
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 Glu Ala Val Ala Ala Leu Leu Lys Cys Ser Leu Gly Thr Val Thr Leu
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 Glu Val Gly Arg Ile Lys Ala Gly Pro Phe His Ser Glu Arg Arg Pro
 740 745 750
 Ser Gln Thr Ser Gln Val Ser Glu Gly Ser Leu Ser Ser Phe Thr Phe
 755 760 765
 Pro Leu Ser Gly Ser Ser Thr Ser Glu Ser Leu Glu Ser Ser Ser Lys
 770 775 780

Lys Asn Ala Leu Ala Ser Glu Ile Gln Gly Leu Arg Thr Val Glu Met
 785 790 795 800
 Lys Lys Gly Pro Thr Asp Ser Leu Gly Ile Ser Ile Ala Gly Gly Val
 805 810 815
 Gly Ser Pro Leu Gly Asp Val Pro Ile Phe Ile Ala Met Met His Pro
 820 825 830
 Thr Gly Val Ala Ala Gln Thr Gln Lys Leu Arg Val Gly Asp Arg Ile
 835 840 845
 Val Thr Ile Cys Gly Thr Ser Thr Glu Gly Met Thr His Thr Gln Ala
 850 855 860
 Val Asn Leu Leu Lys Asn Ala Ser Gly Ser Ile Glu Met Gln Val Val
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 Ala Gly Gly Asp Val Ser Val Val Thr Gly His His Gln Glu Pro Ala
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 Ser Ser Ser Leu Ser Phe Thr Gly Leu Thr Ser Thr Ser Ile Phe Gln
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 Asp Asp Leu Gly Pro Pro Gln Cys Lys Ser Ile Thr Leu Glu Arg Gly
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 Pro Asp Gly Leu Gly Phe Ser Ile Val Gly Gly Tyr Gly Ser Pro His
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 Gly Asp Leu Pro Ile Tyr Val Lys Thr Val Phe Ala Lys Gly Ala Ala
 945 950 955 960
 Ser Glu Asp Gly Arg Leu Lys Arg Gly Asp Gln Ile Ile Ala Val Asn
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 ccaattcattc cagttctcat cacccttcat tagttaaatg gcataacttt acttggggaa 240
 aatcaccaag atgtggtgaa tatcttaaaa gaactgccta tagaagtgac a atg gtg 297
 Met Val
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tgc tgt cgt cga act gtg cca ccc acc acc caa tca gaa ttg gat agc 345
 Cys Cys Arg Arg Thr Val Pro Pro Thr Thr Gln Ser Glu Leu Asp Ser
 5 10 15

ctg gac tta tgt gat att gag cta aca gaa aag cct cac gta gat cta 393
 Leu Asp Leu Cys Asp Ile Glu Leu Thr Glu Lys Pro His Val Asp Leu
 20 25 30

ggt gag ttc atc ggg tca tca gag aca gag gat cca gtg ctg gcg atg 441
 Gly Glu Phe Ile Gly Ser Ser Glu Thr Glu Asp Pro Val Leu Ala Met
 35 40 45 50

act gat gcg ggt cag agt aca gaa gag gtt caa gca cct ttg gcc atg 489
 Thr Asp Ala Gly Gln Ser Thr Glu Glu Val Gln Ala Pro Leu Ala Met
 55 60 65

tgg gag gct ggc att cag cac ata gag ctg gag aaa ggg agc aaa gga Trp Glu Ala Gly Ile Gln His Ile Glu Leu Glu Lys Gly Ser Lys Gly 70 75 80	537
ctt ggt ttt agc att tta gat tat cag gat cca att gat cca gca agc Leu Gly Phe Ser Ile Leu Asp Tyr Gln Asp Pro Ile Asp Pro Ala Ser 85 90 95	585
act gtg att ata att cgt tct ttg gtg cct ggc ggc att gct gaa aag Thr Val Ile Ile Ile Arg Ser Leu Val Pro Gly Gly Ile Ala Glu Lys 100 105 110	633
gat gga cga ctt ctt ggt gac cga ctc atg ttt gta aac gat gtt Asp Gly Arg Leu Leu Pro Gly Asp Arg Leu Met Phe Val Asn Asp Val 115 120 125 130	681
aac ttg gaa aac agc agt ctt gag gaa gct gta gaa gca ctg aag gga Asn Leu Glu Asn Ser Ser Leu Glu Ala Val Glu Ala Leu Lys Gly 135 140 145	729
gca ccg tca ggg act gtg aga ata gga gtt gct aag cct tta ccc ctt Ala Pro Ser Gly Thr Val Arg Ile Gly Val Ala Lys Pro Leu Pro Leu 150 155 160	777
tca cca gaa gaa ggt tat gtt tct gct aag gag gat tcc ttt ctc tac Ser Pro Glu Glu Gly Tyr Val Ser Ala Lys Glu Asp Ser Phe Leu Tyr 165 170 175	825
cca cca cac tcc tgt gag gaa gca ggg ctg gct gac aaa ccc ctc ttc Pro Pro His Ser Cys Glu Glu Ala Gly Leu Ala Asp Lys Pro Leu Phe 180 185 190	873
agg gct gac ttg gct ctg gtg ggc aca aat gat gct gac tta gta gat Arg Ala Asp Leu Ala Leu Val Gly Thr Asn Asp Ala Asp Leu Val Asp 195 200 205 210	921
gaa tcc aca ttt gag tct cca tac tct cct gaa aat gac agc atc tac Glu Ser Thr Phe Glu Ser Pro Tyr Ser Pro Glu Asn Asp Ser Ile Tyr 215 220 225	969
tct act caa gcc tct att tta tct ctt cat ggc agt tct tgt ggt gat Ser Thr Gln Ala Ser Ile Leu Ser Leu His Gly Ser Ser Cys Gly Asp 230 235 240	1017
ggc ctg aac tat ggt tct tcc ctt cca tca tct cct cct aag gat gtt Gly Leu Asn Tyr Gly Ser Ser Leu Pro Ser Ser Pro Pro Lys Asp Val 245 250 255	1065
att gaa aat tct tgt gat cca gta ctt gat ctg cat atg tct ctg gag Ile Glu Asn Ser Cys Asp Pro Val Leu Asp Leu His Met Ser Leu Glu 260 265 270	1113
gaa cta tat acc cag aat ctc ctg gaa aga cag gat gag aat aca cct Glu Leu Tyr Thr Gln Asn Leu Leu Glu Arg Gln Asp Glu Asn Thr Pro 275 280 285 290	1161
tcg gtg gac ata agt atg ggg cct gct tct ggc ttt act ata aat gac Ser Val Asp Ile Ser Met Gly Pro Ala Ser Gly Phe Thr Ile Asn Asp 295 300 305	1209

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ata gtg tgg act gaa tct cat tta cca agt gaa gtt ata tca agt gca Ile Val Trp Thr Glu Ser His Leu Pro Ser Glu Val Ile Ser Ser Ala 325 330 335	1305
gaa ctt cct tct gtg cta ccc gat tca gct gga aag ggc tct gag cac Glu Leu Pro Ser Val Leu Pro Asp Ser Ala Gly Lys Gly Ser Glu His 340 345 350	1353
ctg ctt gaa cag agc tcc ctg gcc tgt aat gct gag tgt gtc atg ctt Leu Leu Glu Gln Ser Ser Leu Ala Cys Asn Ala Glu Cys Val Met Leu 355 360 365 370	1401
caa aat gta tct aaa gaa tct ttt gaa agg act att aat ata gca aaa Gln Asn Val Ser Lys Glu Ser Phe Glu Arg Thr Ile Asn Ile Ala Lys 375 380 385	1449
ggc aat tct agc cta gga atg aca gtt agt gct aat aaa gat ggc ttg Gly Asn Ser Ser Leu Gly Met Thr Val Ser Ala Asn Lys Asp Gly Leu 390 395 400	1497
ggg atg atc gtt cga agc att att cat gga ggt gcc att agt cga gat Gly Met Ile Val Arg Ser Ile Ile His Gly Gly Ala Ile Ser Arg Asp 405 410 415	1545
ggc cg att gcc att ggg gac tgc atc ttg tcc att aat gaa gag tct Gly Arg Ile Ala Ile Gly Asp Cys Ile Leu Ser Ile Asn Glu Glu Ser 420 425 430	1593
acc atc agt gta acc aat gcc cag gca cga gct atg ttg aga aga cat Thr Ile Ser Val Thr Asn Ala Gln Ala Arg Ala Met Leu Arg Arg His 435 440 445 450	1641
tct ctc att ggc cct gac ata aaa att act tat gtg cct gca gaa cat Ser Leu Ile Gly Pro Asp Ile Lys Ile Thr Tyr Val Pro Ala Glu His 455 460 465	1689
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gca ctg gat att ttt tct tca tac act ggc aga gac att cca gaa tta Ala Leu Asp Ile Phe Ser Ser Tyr Thr Gly Arg Asp Ile Pro Glu Leu 485 490 495	1785
cca gag cga gaa gag gga gag ggt gaa gaa agc gaa ctt caa aac aca Pro Glu Arg Glu Glu Gly Glu Gly Glu Ser Glu Leu Gln Asn Thr 500 505 510	1833
gca tat agc aat tgg aat cag ccc agg cgg gtg gaa ctc tgg aga gaa Ala Tyr Ser Asn Trp Asn Gln Pro Arg Arg Val Glu Leu Trp Arg Glu 515 520 525 530	1881
cca agc aaa tcc tta ggc atc agc att gtt ggt gga cga ggg atg ggg Pro Ser Lys Ser Leu Gly Ile Ser Ile Val Gly Gly Arg Gly Met Gly 535 540 545	1929

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Ser	Arg	Leu	Ser	Asn	Gly	Glu	Val	Met	Arg	Gly	Ile	Phe	Ile	Lys	His	
550								555						560		
gtt	ctg	gaa	gat	agt	cca	gct	ggc	aaa	aat	gga	acc	ttg	aaa	cct	gga	2025
Val	Leu	Glu	Asp	Ser	Pro	Ala	Gly	Lys	Asn	Gly	Thr	Leu	Lys	Pro	Gly	
565					570							575				
gat	aga	atc	gta	gag	gca	ccc	agt	cag	tca	gag	tca	gag	cca	gag	aag	2073
Asp	Arg	Ile	Val	Glu	Ala	Pro	Ser	Gln	Ser	Glu	Ser	Glu	Pro	Glu	Lys	
580						585				590						
gct	cca	ttg	tgc	agt	gtg	ccc	cca	ccc	cct	cct	tca	gcc	ttt	gcc	gaa	2121
Ala	Pro	Leu	Cys	Ser	Val	Pro	Pro	Pro	Pro	Pro	Ser	Ala	Phe	Ala	Glu	
595					600					605				610		
atg	ggt	agt	gat	cac	aca	cag	tca	tct	gca	agc	aaa	atc	tca	caa	gat	2169
Met	Gly	Ser	Asp	His	Thr	Gln	Ser	Ser	Ala	Ser	Lys	Ile	Ser	Gln	Asp	
615						620					625					
gtg	gac	aaa	gag	gat	gag	ttt	ggt	tac	agc	tgg	aaa	aat	atc	aga	gag	2217
Val	Asp	Lys	Glu	Asp	Glu	Phe	Gly	Tyr	Ser	Trp	Lys	Asn	Ile	Arg	Glu	
630						635					640					
cgt	tat	gga	acc	cta	aca	ggc	gag	ctg	cat	atg	att	gaa	ctg	gag	aaa	2265
Arg	Tyr	Gly	Thr	Leu	Thr	Gly	Glu	Leu	His	Met	Ile	Glu	Leu	Glu	Lys	
645						650					655					
ggc	cat	agt	ggt	ttg	ggc	cta	agt	ctt	gct	ggg	aac	aaa	gac	cga	tcc	2313
Gly	His	Ser	Gly	Leu	Gly	Leu	Ser	Leu	Ala	Gly	Asn	Lys	Asp	Arg	Ser	
660						665				670						
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Arg	Met	Ser	Val	Phe	Ile	Val	Gly	Ile	Asp	Pro	Asn	Gly	Ala	Ala	Gly	
675					680					685				690		
aaa	gat	ggt	cga	ttg	caa	att	gca	gat	gag	ctt	cta	gag	atc	aat	ggt	2409
Lys	Asp	Gly	Arg	Leu	Gln	Ile	Ala	Asp	Glu	Leu	Leu	Glu	Ile	Asn	Gly	
695						700					705					
cag	att	tta	tat	gga	aga	agt	cat	cag	aat	gcc	tca	tca	atc	att	aaa	2457
Gln	Ile	Leu	Tyr	Gly	Arg	Ser	His	Gln	Asn	Ala	Ser	Ser	Ile	Ile	Lys	
710						715					720					
tgt	gcc	cct	tct	aaa	gtg	aaa	ata	att	ttt	atc	aga	aat	aaa	gat	gca	2505
Cys	Ala	Pro	Ser	Lys	Val	Lys	Ile	Ile	Phe	Ile	Arg	Asn	Lys	Asp	Ala	
725						730					735					
gtg	aat	cag	atg	gcc	gta	tgt	cct	gga	aat	gca	gta	gaa	cct	ttg	cct	2553
Val	Asn	Gln	Met	Ala	Val	Cys	Pro	Gly	Asn	Ala	Val	Glu	Pro	Leu	Pro	
740						745					750					
tct	aac	tca	gaa	aat	ctt	caa	aat	aag	gag	aca	gag	cca	act	gtt	act	2601
Ser	Asn	Ser	Glu	Asn	Leu	Gln	Asn	Lys	Glu	Thr	Glu	Pro	Thr	Val	Thr	
755					760					765			770			
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Thr	Ser	Asp	Ala	Ala	Val	Asp	Leu	Ser	Ser	Phe	Lys	Asn	Val	Gln	His	
775						780					785					

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 35 40 45
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 35 40 45
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 35 40 45
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Thr Ser Glu Ser Leu Glu Ser Ser Ser Lys Lys Asn Ala Leu Ala Ser	
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Glu Ile Gln Gly Leu Arg Thr Val Glu Met Lys Lys Gly Pro Thr Asp	
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Ser Leu Gly Ile Ser Ile Ala Gly Gly Val Gly Ser Pro Leu Gly Asp	
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Val Pro Ile Phe Ile Ala Met Met His Pro Thr Gly Val Ala Ala Gln	
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Thr Gln Lys Leu Arg Val Gly Asp Arg Ile Val Thr Ile Cys Gly Thr	
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Thr Gly Leu Thr Ser Thr Ser Ile Phe Gln Asp Asp Leu Gly Pro Pro	
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Gln Cys Lys Ser Ile Thr Leu Glu Arg Gly Pro Asp Gly Leu Gly Phe	
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Ser Ile Val Gly Gly Tyr Gly Ser Pro His Gly Asp Leu Pro Ile Tyr	
695 700 705	
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Val Lys Thr Val Phe Ala Lys Gly Ala Ala Ser Glu Asp Gly Arg Leu	
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Lys Arg Gly Asp Gln Ile Ile Ala Val Asn Gly Gln Ser Leu Glu Gly	
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gtc acc cat gaa gaa gct gtt gcc atc ctt aaa cgg aca aaa ggc act	2310
Val Thr His Glu Glu Ala Val Ala Ile Leu Lys Arg Thr Lys Gly Thr	
745 750 755	
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Val Thr Leu Met Val Leu Ser	
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20 25 30		
ccc ata gtt tcc cgt tct cca tct gca gcc agc aca att tca gct cac Pro Ile Val Ser Arg Ser Pro Ser Ala Ala Ser Thr Ile Ser Ala His	143	
35 40 45		
tct aat ccg gtt cac tgg caa cac atg gaa acg att gaa ttg gtg aat Ser Asn Pro Val His Trp Gln His Met Glu Thr Ile Glu Leu Val Asn	191	
50 55 60		
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65 70 75		
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80 85 90 95		
cgt tta tgc agt gga gac cac att cta aag att ggt gac aca gat cta Arg Leu Cys Ser Gly Asp His Ile Leu Lys Ile Gly Asp Thr Asp Leu	335	
100 105 110		
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115 120 125		
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130 135 140		
gca ccc act gct ttg ggc atc acc ctc tcc tca tcc cca act tca acg Ala Pro Thr Ala Leu Gly Ile Thr Leu Ser Ser Ser Pro Thr Ser Thr	479	
145 150 155		
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160 165 170 175		
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225 230 235		

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Phe Thr Asn Gln Gln Ala Val Glu Val Leu Arg His Thr Gly Gln Thr	
240 245 250 255	
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Val Leu Leu Thr Leu Met Arg Arg Gly Met Lys Gln Glu Ala Glu Leu	
260 265 270	
atg tca agg gaa gac gtc aca aaa gat gca gat ttg tct cct gtt aat	863
Met Ser Arg Glu Asp Val Thr Lys Asp Ala Asp Leu Ser Pro Val Asn	
275 280 285	
gcc agc ata atc aaa gaa aat tat gaa aaa gat gaa gat ttt tta tct	911
Ala Ser Ile Ile Lys Glu Asn Tyr Glu Lys Asp Glu Asp Phe Leu Ser	
290 295 300	
tcg acg aga aac acc aac ata tta cca act gaa gaa gaa ggg tat cca	959
Ser Thr Arg Asn Thr Asn Ile Leu Pro Thr Glu Glu Glu Gly Tyr Pro	
305 310 315	
tta ctg tca gct gag ata gaa gaa ata gaa gat gca caa aaa caa gaa	1007
Leu Leu Ser Ala Glu Ile Glu Ile Glu Asp Ala Gln Lys Gln Glu	
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Ile Val Val Ala His Val Ser Lys Phe Ser Glu Asn Ser Gly Leu Gly	
355 360 365	
ata agc ctg gaa gcg aca gtg gga cat cat ttt atc cga tct gtt cta	1151
Ile Ser Leu Ala Thr Val Gly His His Phe Ile Arg Ser Val Leu	
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Pro Glu Gly Pro Val Gly His Ser Gly Lys Leu Phe Ser Gly Asp Glu	
385 390 395	
cta ttg gaa gta aat ggc ata act tta ctt ggg gaa aat cac caa gat	1247
Leu Leu Glu Val Asn Gly Ile Thr Leu Leu Gly Glu Asn His Gln Asp	
400 405 410 415	
gtg gtg aat atc tta aaa gaa ctg cct ata gaa gtg aca atg gtg tgc	1295
Val Val Asn Ile Leu Lys Glu Leu Pro Ile Glu Val Thr Met Val Cys	
420 425 430	
tgt cgt cga act gtg cca ccc acc acc caa tca gaa ttg gat agc ctg	1343
Cys Arg Arg Thr Val Pro Pro Thr Thr Gln Ser Glu Leu Asp Ser Leu	
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Asp Leu Cys Asp Ile Glu Leu Thr Glu Lys Pro His Val Asp Leu Gly	
450 455 460	
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Glu Phe Ile Gly Ser Ser Glu Pro Glu Asp Pro Val Leu Ala Met Thr	
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Asp Ala Gly Gln Ser Thr Glu Glu Val Gln Ala Pro Leu Ala Met Trp	
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Glu Ala Gly Ile Gln His Ile Met Leu Glu Lys Gly Ser Lys Gly Leu	
500 505 510	
ggt ttt agc att tta gat tat cag gat cca att gat cca gca agc act	1583
Gly Phe Ser Ile Leu Asp Tyr Gln Asp Pro Ile Asp Pro Ala Ser Thr	
515 520 525	
gtg att ata att cgt tct ttg gtg cct ggc ggc att gct gaa aag gat	1631
Val Ile Ile Ile Arg Ser Leu Val Pro Gly Gly Ile Ala Glu Lys Asp	
530 535 540	
gga cga ctt ctt cct ggt gac cga ctc atg ttt gta aac gat gtt aac	1679
Gly Arg Leu Leu Pro Gly Asp Arg Leu Met Phe Val Asn Asp Val Asn	
545 550 555	
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Leu Glu Asn Ser Ser Leu Glu Glu Ala Val Glu Ala Leu Lys Gly Ala	
560 565 570 575	
ccg tca ggg act gtg aga ata gga gtt gct aag cct tta ccc ctt	1772
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Ala Glu Arg Leu Gln Thr Lys Leu Arg Glu Arg Gly Asp Val Ala Asn	
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gaa gac aaa ctg agc ctt ctg aag tca gtc ctg cag agc cct ctc ttc	205
Glu Asp Lys Leu Ser Leu Leu Lys Ser Val Leu Gln Ser Pro Leu Phe	
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Ser Gln Ile Leu Ser Leu Gln Thr Ser Val Gln Gln Leu Lys Asp Gln	
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gta aat att gca act tca gca act tca aat att gaa tat gcc cac gtt	301
Val Asn Ile Ala Thr Ser Ala Thr Ser Asn Ile Glu Tyr Ala His Val	
65 70 75	
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Pro His Leu Ser Pro Ala Val Ile Pro Thr Leu Gln Asn Glu Ser Phe	
80 85 90	
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Leu Leu Ser Pro Asn Asn Gly Asn Leu Glu Ala Leu Thr Gly Pro Gly	
95 100 105	
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Ile Pro His Ile Asn Gly Lys Pro Ala Cys Asp Glu Phe Asp Gln Leu	
110 115 120 125	
atc aaa aat atg gcc cag ggt cgc cat gta gaa gtt ttt gag ctc ctc	493
Ile Lys Asn Met Ala Gln Gly Arg His Val Glu Val Phe Glu Leu Leu	
130 135 140	
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Lys Pro Pro Ser Gly Gly Leu Gly Phe Ser Val Val Gly Leu Arg Ser	
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Glu Asn Arg Gly Glu Leu Gly Ile Phe Val Gln Glu Ile Gln Glu Gly	
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Ser Val Ala His Arg Asp Gly Arg Leu Lys Glu Thr Asp Gln Ile Leu	
175 180 185	
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Ala Ile Asn Gly Gln Ala Leu Asp Gln Thr Ile Thr His Gln Gln Ala	
190 195 200 205	
atc agc atc ctg cag aaa gcc aaa gat act gtc cag cta gtt att gcc	733
Ile Ser Ile Leu Gln Lys Ala Lys Asp Thr Val Gln Leu Val Ile Ala	
210 215 220	
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Leu Glu Gln Ser Ser Leu Ala Cys Asn Ala Glu Cys Val Met Leu Gln		
20 25 30		
aat gta tct aaa gaa tct ttt gaa agg act att aat ata gca aaa ggc		143
Asn Val Ser Lys Glu Ser Phe Glu Arg Thr Ile Asn Ile Ala Lys Gly		
35 40 45		
aat tct agc cta gga atg aca gtt agt gct aat aaa gat ggc ttg ggg		191
Asn Ser Ser Leu Gly Met Thr Val Ser Ala Asn Lys Asp Gly Leu Gly		
50 55 60		
atg atc gtt cga agc att att cat gga ggt gcc att agt cga gat ggc		239
Met Ile Val Arg Ser Ile Ile His Gly Gly Ala Ile Ser Arg Asp Gly		
65 70 75		
cgg att gcc att ggg gac tgc atc ttg tcc att aat gaa gag tct acc		287
Arg Ile Ala Ile Gly Asp Cys Ile Leu Ser Ile Asn Glu Glu Ser Thr		
80 85 90 95		
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Ile Ser Val Thr Asn Ala Gln Ala Arg Ala Met Leu Arg Arg His Ser		
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ctc att ggc cct gac ata aaa att act tat gtg cct gca gaa cat ttg		383
Leu Ile Gly Pro Asp Ile Lys Ile Thr Tyr Val Pro Ala Glu His Leu		
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Glu Glu Phe Lys Ile Ser Leu Gly Gln Gln Ser Gly Arg Val Met Ala		
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ctg gat att ttt tct tca tac act ggc aga gac att cca gaa tta cca		479
Leu Asp Ile Phe Ser Ser Tyr Thr Gly Arg Asp Ile Pro Glu Leu Pro		
145 150 155		
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Glu Arg Glu Glu Gly Glu Gly Glu Ser Glu Leu Gln Asn Thr Ala		
160 165 170 175		
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Tyr Ser Asn Trp Asn Gln Pro Arg Arg Val Glu Leu Trp Arg Glu Pro		
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Ser Lys Ser Leu Gly Ile Ser Ile Val Gly Gly Arg Gly Met Gly Ser		
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210 215 220	
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Leu Glu Asp Ser Pro Ala Gly Lys Asn Gly Thr Leu Lys Pro Gly Asp	
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Leu Glu Gln Ser Ser Leu Ala Cys Asn Ala Glu Cys Val Met Leu Gln	
20 25 30	
aat gta tct aaa gaa tct ttt gaa agg act att aat ata gca aaa ggc	143
Asn Val Ser Lys Glu Ser Phe Glu Arg Thr Ile Asn Ile Ala Lys Gly	
35 40 45	
aat tct agc cta gga atg aca gtt agt gct aat aaa gat ggc ttg ggg	191
Asn Ser Ser Leu Gly Met Thr Val Ser Ala Asn Lys Asp Gly Leu Gly	
50 55 60	
atg atc gtt cga agc att att cat gga ggt gcc att agt cga gat ggc	239
Met Ile Val Arg Ser Ile Ile His Gly Gly Ala Ile Ser Arg Asp Gly	
65 70 75	
cg att gcc att ggg gac tgc atc ttg tcc att aat gaa gag tct acc	287
Arg Ile Ala Ile Gly Asp Cys Ile Leu Ser Ile Asn Glu Glu Ser Thr	
80 85 90 95	
atc agt gta acc aat gcc cag gca cga gct atg ttg aga aga cat tct	335
Ile Ser Val Thr Asn Ala Gln Ala Arg Ala Met Leu Arg Arg His Ser	
100 105 110	
ctc att ggc cct gac ata aaa att act tat gtg cct gca gaa cat ttg	383
Leu Ile Gly Pro Asp Ile Lys Ile Thr Tyr Val Pro Ala Glu His Leu	
115 120 125	
gaa gag ttc aaa ata agc ttg gga caa caa tct gga aga gta atg gca	431
Glu Glu Phe Lys Ile Ser Leu Gly Gln Gln Ser Gly Arg Val Met Ala	
130 135 140	
ctg gat att ttt tct tca tac act ggc aga gac att cca gaa tta cca	479
Leu Asp Ile Phe Ser Ser Tyr Thr Gly Arg Asp Ile Pro Glu Leu Pro	
145 150 155	

gag cga gaa gag gga gag ggt gaa gaa agc gaa ctt caa aac aca gca Glu Arg Glu Glu Gly Glu Gly Glu Ser Glu Leu Gln Asn Thr Ala 160 165 170 175	527
tat agc aat tgg aat cag ccc agg cgg gtg gaa ctc tgg aga gaa cca Tyr Ser Asn Trp Asn Gln Pro Arg Arg Val Glu Leu Trp Arg Glu Pro 180 185 190	575
agc aaa tcc tta ggc atc agc att gtt ggt gga cga ggg atg ggg agt Ser Lys Ser Leu Gly Ile Ser Ile Val Gly Gly Arg Gly Met Gly Ser 195 200 205	623
cgg cta agc aat gga gaa gtg atg agg ggc att ttc atc aaa cat gtt Arg Leu Ser Asn Gly Glu Val Met Arg Gly Ile Phe Ile Lys His Val 210 215 220	671
ctg gaa gat agt cca gct ggc aaa aat gga acc ttg aaa cct gga gat Leu Glu Asp Ser Pro Ala Gly Lys Asn Gly Thr Leu Lys Pro Gly Asp 225 230 235	719
aga atc gta gag gtg gat gga atg gac ctc aga gat gca agc cat gaa Arg Ile Val Glu Val Asp Gly Met Asp Leu Arg Asp Ala Ser His Glu 240 245 250 255	767
caa gct gtg gaa gcc att cgg aaa gca ggc aac cct gta gtc ttt atg Gln Ala Val Glu Ala Ile Arg Lys Ala Gly Asn Pro Val Val Phe Met 260 265 270	815
gta tagagcttta ttacagacca agggcaccca gtcagtcaga gtcagag Val	865

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 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
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ctt gaa cag agc tcc ctg gcc tgt aat gct gag tgt gtc atg ctt caa Leu Glu Gln Ser Ser Leu Ala Cys Asn Ala Glu Cys Val Met Leu Gln 20 25 30	95
aat gta tct aaa gaa tct ttt gaa agg act att aat ata gca aaa ggc Asn Val Ser Lys Glu Ser Phe Glu Arg Thr Ile Asn Ile Ala Lys Gly 35 40 45	143
aat tct agc cta gga atg aca gtt agt gct aat aaa gat ggc ttg ggg Asn Ser Ser Leu Gly Met Thr Val Ser Ala Asn Lys Asp Gly Leu Gly 50 55 60	191
atg atc gtt cga agc att att cat gga ggt gcc att agt cga gat ggc Met Ile Val Arg Ser Ile Ile His Gly Gly Ala Ile Ser Arg Asp Gly 65 70 75	239

cg g att gcc att ggg gac tgc atc ttg tcc att aat gaa gag tct acc Arg Ile Ala Ile Gly Asp Cys Ile Leu Ser Ile Asn Glu Glu Ser Thr 80 85 90 95	287
atc agt gta acc aat gcc cag gca cga gct atg ttg aga aga cat tct Ile Ser Val Thr Asn Ala Gln Ala Arg Ala Met Leu Arg Arg His Ser 100 105 110	335
ctc att ggc cct gac ata aaa att act tat gtg cct gca gaa cat ttg Leu Ile Gly Pro Asp Ile Lys Ile Thr Tyr Val Pro Ala Glu His Leu 115 120 125	383
gaa gag ttc aaa ata agc ttg gga caa caa tct gga aga gta atg gca Glu Glu Phe Lys Ile Ser Leu Gly Gln Gln Ser Gly Arg Val Met Ala 130 135 140	431
ctg gat att ttt tct tca tac act ggc aga gac att cca gaa tta cca Leu Asp Ile Phe Ser Ser Tyr Thr Gly Arg Asp Ile Pro Glu Leu Pro 145 150 155	479
gag cga gaa gag gga gag ggt gaa gaa agc gaa ctt caa aac aca gca Glu Arg Glu Glu Gly Glu Glu Ser Glu Leu Gln Asn Thr Ala 160 165 170 175	527
tat agc aat tgg aat cag ccc agg cgg gtg gaa ctc tgg aga gaa cca Tyr Ser Asn Trp Asn Gln Pro Arg Arg Val Glu Leu Trp Arg Glu Pro 180 185 190	575
agc aaa tcc tta ggc atc agc att gtt ggt gga cga ggg atg ggg agt Ser Lys Ser Leu Gly Ile Ser Ile Val Gly Gly Arg Gly Met Gly Ser 195 200 205	623
cg g cta agc aat gga gaa gtg atg agg ggc att ttc atc aaa cat gtt Arg Leu Ser Asn Gly Glu Val Met Arg Gly Ile Phe Ile Lys His Val 210 215 220	671
ctg gaa gat agt cca gct ggc aaa aat gga acc ttg aaa cct gga gat Leu Glu Asp Ser Pro Ala Gly Lys Asn Gly Thr Leu Lys Pro Gly Asp 225 230 235	719
aga atc gta gag gtg gat gga atg gac ctc aga gat gca agc cat gaa Arg Ile Val Glu Val Asp Gly Met Asp Leu Arg Asp Ala Ser His Glu 240 245 250 255	767
caa gct gtg gaa gcc att cg g aaa gca ggc aac cct gta gtc ttt atg Gln Ala Val Glu Ala Ile Arg Lys Ala Gly Asn Pro Val Val Phe Met 260 265 270	815
gta cag agc att ata aac aga cca agg aaa tcc cct ttg cct tcc ttg Val Gln Ser Ile Ile Asn Arg Pro Arg Lys Ser Pro Leu Pro Ser Leu 275 280 285	863
ctg cac aac ctt tac cct aag tac aac ttc agc agc act aac cca ttt Leu His Asn Leu Tyr Pro Lys Tyr Asn Phe Ser Ser Thr Asn Pro Phe 290 295 300	911
gct gac tct cta caa atc aac gcc gac aag gca ccc agt cag tca gag Ala Asp Ser Leu Gln Ile Asn Ala Asp Lys Ala Pro Ser Gln Ser Glu 305 310 315	959

tca gag
Ser Glu
320

965

<210> 82
<211> 2000
<212> PRT
<213> Homo sapiens

<400> 82
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Leu Gln Thr Lys Leu Arg Glu Arg Gly Asp Val Ala Asn Glu Asp Lys
20 25 30
Leu Ser Leu Leu Lys Ser Val Leu Gln Ser Pro Leu Phe Ser Gln Ile
35 40 45
Leu Ser Leu Gln Thr Ser Val Gln Gln Leu Lys Asp Gln Val Asn Ile
50 55 60
Ala Thr Ser Ala Thr Ser Asn Ile Glu Tyr Ala His Val Pro His Leu
65 70 75 80
Ser Pro Ala Val Ile Pro Thr Leu Gln Asn Glu Ser Phe Leu Leu Ser
85 90 95
Pro Asn Asn Gly Asn Leu Glu Ala Leu Thr Gly Pro Gly Ile Pro His
100 105 110
Ile Asn Gly Lys Pro Ala Cys Asp Glu Phe Asp Gln Leu Ile Lys Asn
115 120 125
Met Ala Gln Gly Arg His Val Glu Val Phe Glu Leu Leu Lys Pro Pro
130 135 140
Ser Gly Gly Leu Gly Phe Ser Val Val Gly Leu Arg Ser Glu Asn Arg
145 150 155 160
Gly Glu Leu Gly Ile Phe Val Gln Glu Ile Gln Glu Gly Ser Val Ala
165 170 175
His Arg Asp Gly Arg Leu Lys Glu Thr Asp Gln Ile Leu Ala Ile Asn
180 185 190
Gly Gln Ala Leu Asp Gln Thr Ile Thr His Gln Gln Ala Ile Ser Ile
195 200 205
Leu Gln Lys Ala Lys Asp Thr Val Gln Leu Val Ile Ala Arg Gly Ser
210 215 220
Leu Pro Gln Leu Val Ser Pro Ile Val Ser Arg Ser Pro Ser Ala Ala
225 230 235 240
Ser Thr Ile Ser Ala His Ser Asn Pro Val His Trp Gln His Met Glu
245 250 255
Thr Ile Glu Leu Val Asn Asp Gly Ser Gly Leu Gly Phe Gly Ile Ile
260 265 270
Gly Gly Lys Ala Thr Gly Val Ile Val Lys Thr Ile Leu Pro Gly Gly
275 280 285
Val Ala Asp Gln His Gly Arg Leu Cys Ser Gly Asp His Ile Leu Lys
290 295 300
Ile Gly Asp Thr Asp Leu Ala Gly Met Ser Ser Glu Gln Val Ala Gln
305 310 315 320
Val Leu Arg Gln Cys Gly Asn Arg Val Lys Leu Met Ile Ala Arg Ser
325 330 335
Ala Ile Glu Glu Arg Thr Ala Pro Thr Ala Leu Gly Ile Thr Leu Ser
340 345 350
Ser Ser Pro Thr Ser Thr Pro Glu Leu Arg Val Asp Ala Ser Thr Gln
355 360 365
Lys Gly Glu Glu Ser Glu Thr Phe Asp Val Glu Leu Thr Lys Asn Val
370 375 380
Gln Gly Leu Gly Ile Thr Ile Ala Gly Tyr Ile Gly Asp Lys Lys Leu
385 390 395 400
Glu Pro Ser Gly Ile Phe Val Lys Ser Ile Thr Lys Ser Ser Ala Val
405 410 415

Glu His Asp Gly Arg Ile Gln Ile Gly Asp Gln Ile Ile Ala Val Asp
 420 425 430
 Gly Thr Asn Leu Gln Gly Phe Thr Asn Gln Gln Ala Val Glu Val Leu
 435 440 445
 Arg His Thr Gly Gln Thr Val Leu Leu Thr Leu Met Arg Arg Gly Met
 450 455 460
 Lys Gln Glu Ala Glu Leu Met Ser Arg Glu Asp Val Thr Lys Asp Ala
 465 470 475 480
 Asp Leu Ser Pro Val Asn Ala Ser Ile Ile Lys Glu Asn Tyr Glu Lys
 485 490 495
 Asp Glu Asp Phe Leu Ser Ser Thr Arg Asn Thr Asn Ile Leu Pro Thr
 500 505 510
 Glu Glu Glu Gly Tyr Pro Leu Leu Ser Ala Glu Ile Glu Glu Ile Glu
 515 520 525
 Asp Ala Gln Lys Gln Glu Ala Ala Leu Leu Thr Lys Trp Gln Arg Ile
 530 535 540
 Met Gly Ile Asn Tyr Glu Ile Val Val Ala His Val Ser Lys Phe Ser
 545 550 555 560
 Glu Asn Ser Gly Leu Gly Ile Ser Leu Glu Ala Thr Val Gly His His
 565 570 575
 Phe Ile Arg Ser Val Leu Pro Glu Gly Pro Val Gly His Ser Gly Lys
 580 585 590
 Leu Phe Ser Gly Asp Glu Leu Leu Glu Val Asn Gly Ile Thr Leu Leu
 595 600 605
 Gly Glu Asn His Gln Asp Val Val Asn Ile Leu Lys Glu Leu Pro Ile
 610 615 620
 Glu Val Thr Met Val Cys Cys Arg Arg Thr Val Pro Pro Thr Thr Gln
 625 630 635 640
 Ser Glu Leu Asp Ser Leu Asp Leu Cys Asp Ile Glu Leu Thr Glu Lys
 645 650 655
 Pro His Val Asp Leu Gly Glu Phe Ile Gly Ser Ser Glu Pro Glu Asp
 660 665 670
 Pro Val Leu Ala Met Thr Asp Ala Gly Gln Ser Thr Glu Glu Val Gln
 675 680 685
 Ala Pro Leu Ala Met Trp Glu Ala Gly Ile Gln His Ile Met Leu Glu
 690 695 700
 Lys Gly Ser Lys Gly Leu Gly Phe Ser Ile Leu Asp Tyr Gln Asp Pro
 705 710 715 720
 Ile Asp Pro Ala Ser Thr Val Ile Ile Ile Arg Ser Leu Val Pro Gly
 725 730 735
 Gly Ile Ala Glu Lys Asp Gly Arg Leu Leu Pro Gly Asp Arg Leu Met
 740 745 750
 Phe Val Asn Asp Val Asn Leu Glu Asn Ser Ser Leu Glu Glu Ala Val
 755 760 765
 Glu Ala Leu Lys Gly Ala Pro Ser Gly Thr Val Arg Ile Gly Val Ala
 770 775 780
 Lys Pro Leu Pro Leu Ser Pro Glu Glu Gly Tyr Val Ser Ala Lys Glu
 785 790 795 800
 Asp Ser Phe Leu Tyr Pro Pro His Ser Cys Glu Ala Gly Leu Ala
 805 810 815
 Asp Lys Pro Leu Phe Arg Ala Asp Leu Ala Leu Val Gly Thr Asn Asp
 820 825 830
 Ala Asp Leu Val Asp Glu Ser Thr Phe Glu Ser Pro Tyr Ser Pro Glu
 835 840 845
 Asn Asp Ser Ile Tyr Ser Thr Gln Ala Ser Ile Leu Ser Leu His Gly
 850 855 860
 Ser Ser Cys Gly Asp Gly Leu Asn Tyr Gly Ser Ser Leu Pro Ser Ser
 865 870 875 880
 Pro Pro Lys Asp Val Ile Glu Asn Ser Cys Asp Pro Val Leu Asp Leu
 885 890 895
 His Met Ser Leu Glu Glu Leu Tyr Thr Gln Asn Leu Leu Glu Arg Gln
 900 905 910

Asp Glu Asn Thr Pro Ser Val Asp Ile Ser Met Gly Pro Ala Ser Gly
 915 920 925
 Phe Thr Ile Asn Asp Tyr Thr Pro Ala Asn Ala Ile Glu Gln Gln Tyr
 930 935 940
 Glu Cys Glu Asn Thr Ile Val Trp Thr Glu Ser His Leu Pro Ser Glu
 945 950 955 960
 Val Ile Ser Ser Ala Glu Leu Pro Ser Val Leu Pro Asp Ser Ala Gly
 965 970 975
 Lys Gly Ser Glu His Leu Leu Glu Gln Ser Ser Leu Ala Cys Asn Ala
 980 985 990
 Glu Cys Val Met Leu Gln Asn Val Ser Lys Glu Ser Phe Glu Arg Thr
 995 1000 1005
 Ile Asn Ile Ala Lys Gly Asn Ser Ser Leu Gly Met Thr Val Ser Ala
 1010 1015 1020
 Asn Lys Asp Gly Leu Gly Met Ile Val Arg Ser Ile Ile His Gly Gly
 1025 1030 1035 1040
 Ala Ile Ser Arg Asp Gly Arg Ile Ala Ile Gly Asp Cys Ile Leu Ser
 1045 1050 1055
 Ile Asn Glu Glu Ser Thr Ile Ser Val Thr Asn Ala Gln Ala Arg Ala
 1060 1065 1070
 Met Leu Arg Arg His Ser Leu Ile Gly Pro Asp Ile Lys Ile Thr Tyr
 1075 1080 1085
 Val Pro Ala Glu His Leu Glu Glu Phe Lys Ile Ser Leu Gly Gln Gln
 1090 1095 1100
 Ser Gly Arg Val Met Ala Leu Asp Ile Phe Ser Ser Tyr Thr Gly Arg
 1105 1110 1115 1120
 Asp Ile Pro Glu Leu Pro Glu Arg Glu Glu Gly Glu Gly Glu Ser
 1125 1130 1135
 Glu Leu Gln Asn Thr Ala Tyr Ser Asn Trp Asn Gln Pro Arg Arg Val
 1140 1145 1150
 Glu Leu Trp Arg Glu Pro Ser Lys Ser Leu Gly Ile Ser Ile Val Gly
 1155 1160 1165
 Gly Arg Gly Met Gly Ser Arg Leu Ser Asn Gly Glu Val Met Arg Gly
 1170 1175 1180
 Ile Phe Ile Lys His Val Leu Glu Asp Ser Pro Ala Gly Lys Asn Gly
 1185 1190 1195 1200
 Thr Leu Lys Pro Gly Asp Arg Ile Val Glu Ala Pro Ser Gln Ser Glu
 1205 1210 1215
 Ser Glu Pro Glu Lys Ala Pro Leu Cys Ser Val Pro Pro Pro Pro
 1220 1225 1230
 Ser Ala Phe Ala Glu Met Gly Ser Asp His Thr Gln Ser Ser Ala Ser
 1235 1240 1245
 Lys Ile Ser Gln Asp Val Asp Lys Glu Asp Glu Phe Gly Tyr Ser Trp
 1250 1255 1260
 Lys Asn Ile Arg Glu Arg Tyr Gly Thr Leu Thr Gly Glu Leu His Met
 1265 1270 1275 1280
 Ile Glu Leu Glu Lys Gly His Ser Gly Leu Gly Leu Ser Leu Ala Gly
 1285 1290 1295
 Asn Lys Asp Arg Ser Arg Met Ser Val Phe Ile Val Gly Ile Asp Pro
 1300 1305 1310
 Asn Gly Ala Ala Gly Lys Asp Gly Arg Leu Gln Ile Ala Asp Glu Leu
 1315 1320 1325
 Leu Glu Ile Asn Gly Gln Ile Leu Tyr Gly Arg Ser His Gln Asn Ala
 1330 1335 1340
 Ser Ser Ile Ile Lys Cys Ala Pro Ser Lys Val Lys Ile Ile Phe Ile
 1345 1350 1355 1360
 Arg Asn Lys Asp Ala Val Asn Gln Met Ala Val Cys Pro Gly Asn Ala
 1365 1370 1375
 Val Glu Pro Leu Pro Ser Asn Ser Glu Asn Leu Gln Asn Lys Glu Thr
 1380 1385 1390
 Glu Pro Thr Val Thr Thr Ser Asp Ala Ala Val Asp Leu Ser Ser Phe
 1395 1400 1405

Lys Asn Val Gln His Leu Glu Leu Pro Lys Asp Gln Gly Gly Leu Gly
 1410 1415 1420
 Ile Ala Ile Ser Glu Glu Asp Thr Leu Ser Gly Val Ile Ile Lys Ser
 1425 1430 1435 1440
 Leu Thr Glu His Gly Val Ala Ala Thr Asp Gly Arg Leu Lys Val Gly
 1445 1450 1455
 Asp Gln Ile Leu Ala Val Asp Asp Glu Ile Val Val Gly Tyr Pro Ile
 1460 1465 1470
 Glu Lys Phe Ile Ser Leu Leu Lys Thr Ala Lys Met Thr Val Lys Leu
 1475 1480 1485
 Thr Ile His Ala Glu Asn Pro Asp Ser Gln Ala Val Pro Ser Ala Ala
 1490 1495 1500
 Gly Ala Ala Ser Gly Glu Lys Lys Asn Ser Ser Gln Ser Leu Met Val
 1505 1510 1515 1520
 Pro Gln Ser Gly Ser Pro Glu Pro Glu Ser Ile Arg Asn Thr Ser Arg
 1525 1530 1535
 Ser Ser Thr Pro Ala Ile Phe Ala Ser Asp Pro Ala Thr Cys Pro Ile
 1540 1545 1550
 Ile Pro Gly Cys Glu Thr Thr Ile Glu Ile Ser Lys Gly Arg Thr Gly
 1555 1560 1565
 Leu Gly Leu Ser Ile Val Gly Gly Ser Asp Thr Leu Leu Gly Ala Phe
 1570 1575 1580
 Ile Ile His Glu Val Tyr Glu Glu Gly Ala Ala Cys Lys Asp Gly Arg
 1585 1590 1595 1600
 Leu Trp Ala Gly Asp Gln Ile Leu Glu Val Asn Gly Ile Asp Leu Arg
 1605 1610 1615
 Lys Ala Thr His Asp Glu Ala Ile Asn Val Leu Arg Gln Thr Pro Gln
 1620 1625 1630
 Arg Val Arg Leu Thr Leu Tyr Arg Asp Glu Ala Pro Tyr Lys Glu Glu
 1635 1640 1645
 Glu Val Cys Asp Thr Leu Thr Ile Glu Leu Gln Lys Lys Pro Gly Lys
 1650 1655 1660
 Gly Leu Gly Leu Ser Ile Val Gly Lys Arg Asn Asp Thr Gly Val Phe
 1665 1670 1675 1680
 Val Ser Asp Ile Val Lys Gly Gly Ile Ala Asp Pro Asp Gly Arg Leu
 1685 1690 1695
 Ile Gln Gly Asp Gln Ile Leu Leu Val Asn Gly Glu Asp Val Arg Asn
 1700 1705 1710
 Ala Ser Gln Glu Ala Val Ala Ala Leu Leu Lys Cys Ser Leu Gly Thr
 1715 1720 1725
 Val Thr Leu Glu Val Gly Arg Ile Lys Ala Gly Pro Phe His Ser Glu
 1730 1735 1740
 Arg Arg Pro Ser Gln Thr Ser Gln Val Ser Glu Gly Ser Leu Ser Ser
 1745 1750 1755 1760
 Phe Thr Phe Pro Leu Ser Gly Ser Ser Thr Ser Glu Ser Leu Glu Ser
 1765 1770 1775
 Ser Ser Lys Lys Asn Ala Leu Ala Ser Glu Ile Gln Gly Leu Arg Thr
 1780 1785 1790
 Val Glu Met Lys Lys Gly Pro Thr Asp Ser Leu Gly Ile Ser Ile Ala
 1795 1800 1805
 Gly Gly Val Gly Ser Pro Leu Gly Asp Val Pro Ile Phe Ile Ala Met
 1810 1815 1820
 Met His Pro Thr Gly Val Ala Ala Gln Thr Gln Lys Leu Arg Val Gly
 1825 1830 1835 1840
 Asp Arg Ile Val Thr Ile Cys Gly Thr Ser Thr Glu Gly Met Thr His
 1845 1850 1855
 Thr Gln Ala Val Asn Leu Leu Lys Asn Ala Ser Gly Ser Ile Glu Met
 1860 1865 1870
 Gln Val Val Ala Gly Gly Asp Val Ser Val Val Thr Gly His His Gln
 1875 1880 1885
 Glu Pro Ala Ser Ser Ser Leu Ser Phe Thr Gly Leu Thr Ser Thr Ser
 1890 1895 1900

Ile Phe Gln Asp Asp Leu Gly Pro Pro Gln Cys Lys Ser Ile Thr Leu
 1905 1910 1915 1920
 Glu Arg Gly Pro Asp Gly Leu Gly Phe Ser Ile Val Gly Gly Tyr Gly
 1925 1930 1935
 Ser Pro His Gly Asp Leu Pro Ile Tyr Val Lys Thr Val Phe Ala Lys
 1940 1945 1950
 Gly Ala Ala Ser Glu Asp Gly Arg Leu Lys Arg Gly Asp Gln Ile Ile
 1955 1960 1965
 Ala Val Asn Gly Gln Ser Leu Glu Gly Val Thr His Glu Glu Ala Val
 1970 1975 1980
 Ala Ile Leu Lys Arg Thr Lys Gly Thr Val Thr Leu Met Val Leu Ser
 1985 1990 1995 2000

<210> 83

<211> 2070

<212> PRT

<213> Homo sapiens

<400> 83

Met Leu Glu Ala Ile Asp Lys Asn Arg Ala Leu His Ala Ala Glu Arg
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 20 25 30
 Leu Ser Leu Leu Lys Ser Val Leu Gln Ser Pro Leu Phe Ser Gln Ile
 35 40 45
 Leu Ser Leu Gln Thr Ser Val Gln Gln Leu Lys Asp Gln Val Asn Ile
 50 55 60
 Ala Thr Ser Ala Thr Ser Asn Ile Glu Tyr Ala His Val Pro His Leu
 65 70 75 80
 Ser Pro Ala Val Ile Pro Thr Leu Gln Asn Glu Ser Phe Leu Leu Ser
 85 90 95
 Pro Asn Asn Gly Asn Leu Glu Ala Leu Thr Gly Pro Gly Ile Pro His
 100 105 110
 Ile Asn Gly Lys Pro Ala Cys Asp Glu Phe Asp Gln Leu Ile Lys Asn
 115 120 125
 Met Ala Gln Gly Arg His Val Glu Val Phe Glu Leu Leu Lys Pro Pro
 130 135 140
 Ser Gly Gly Leu Gly Phe Ser Val Val Gly Leu Arg Ser Glu Asn Arg
 145 150 155 160
 Gly Glu Leu Gly Ile Phe Val Gln Glu Ile Gln Glu Gly Ser Val Ala
 165 170 175
 His Arg Asp Gly Arg Leu Lys Glu Thr Asp Gln Ile Leu Ala Ile Asn
 180 185 190
 Gly Gln Ala Leu Asp Gln Thr Ile Thr His Gln Gln Ala Ile Ser Ile
 195 200 205
 Leu Gln Lys Ala Lys Asp Thr Val Gln Leu Val Ile Ala Arg Gly Ser
 210 215 220
 Leu Pro Gln Leu Val Ser Pro Ile Val Ser Arg Ser Pro Ser Ala Ala
 225 230 235 240
 Ser Thr Ile Ser Ala His Ser Asn Pro Val His Trp Gln His Met Glu
 245 250 255
 Thr Ile Glu Leu Val Asn Asp Gly Ser Gly Leu Gly Phe Gly Ile Ile
 260 265 270
 Gly Gly Lys Ala Thr Gly Val Ile Val Lys Thr Ile Leu Pro Gly Gly
 275 280 285
 Val Ala Asp Gln His Gly Arg Leu Cys Ser Gly Asp His Ile Leu Lys
 290 295 300
 Ile Gly Asp Thr Asp Leu Ala Gly Met Ser Ser Glu Gln Val Ala Gln
 305 310 315 320
 Val Leu Arg Gln Cys Gly Asn Arg Val Lys Leu Met Ile Ala Arg Ser
 325 330 335

Ala Ile Glu Glu Arg Thr Ala Pro Thr Ala Leu Gly Ile Thr Leu Ser
 340 345 350
 Ser Ser Pro Thr Ser Thr Pro Glu Leu Arg Val Asp Ala Ser Thr Gln
 355 360 365
 Lys Gly Glu Glu Ser Glu Thr Phe Asp Val Glu Leu Thr Lys Asn Val
 370 375 380
 Gln Gly Leu Gly Ile Thr Ile Ala Gly Tyr Ile Gly Asp Lys Lys Leu
 385 390 395 400
 Glu Pro Ser Gly Ile Phe Val Lys Ser Ile Thr Lys Ser Ser Ala Val
 405 410 415
 Glu His Asp Gly Arg Ile Gln Ile Gly Asp Gln Ile Ile Ala Val Asp
 420 425 430
 Gly Thr Asn Leu Gln Gly Phe Thr Asn Gln Gln Ala Val Glu Val Leu
 435 440 445
 Arg His Thr Gly Gln Thr Val Leu Leu Thr Leu Met Arg Arg Gly Met
 450 455 460
 Lys Gln Glu Ala Glu Leu Met Ser Arg Glu Asp Val Thr Lys Asp Ala
 465 470 475 480
 Asp Leu Ser Pro Val Asn Ala Ser Ile Ile Lys Glu Asn Tyr Glu Lys
 485 490 495
 Asp Glu Asp Phe Leu Ser Ser Thr Arg Asn Thr Asn Ile Leu Pro Thr
 500 505 510
 Glu Glu Glu Gly Tyr Pro Leu Leu Ser Ala Glu Ile Glu Glu Ile Glu
 515 520 525
 Asp Ala Gln Lys Gln Glu Ala Ala Leu Leu Thr Lys Trp Gln Arg Ile
 530 535 540
 Met Gly Ile Asn Tyr Glu Ile Val Val Ala His Val Ser Lys Phe Ser
 545 550 555 560
 Glu Asn Ser Gly Leu Gly Ile Ser Leu Glu Ala Thr Val Gly His His
 565 570 575
 Phe Ile Arg Ser Val Leu Pro Glu Gly Pro Val Gly His Ser Gly Lys
 580 585 590
 Leu Phe Ser Gly Asp Glu Leu Leu Glu Val Asn Gly Ile Thr Leu Leu
 595 600 605
 Gly Glu Asn His Gln Asp Val Val Asn Ile Leu Lys Glu Leu Pro Ile
 610 615 620
 Glu Val Thr Met Val Cys Cys Arg Arg Thr Val Pro Pro Thr Thr Gln
 625 630 635 640
 Ser Glu Leu Asp Ser Leu Asp Leu Cys Asp Ile Glu Leu Thr Glu Lys
 645 650 655
 Pro His Val Asp Leu Gly Glu Phe Ile Gly Ser Ser Glu Pro Glu Asp
 660 665 670
 Pro Val Leu Ala Met Thr Asp Ala Gly Gln Ser Thr Glu Glu Val Gln
 675 680 685
 Ala Pro Leu Ala Met Trp Glu Ala Gly Ile Gln His Ile Met Leu Glu
 690 695 700
 Lys Gly Ser Lys Gly Leu Gly Phe Ser Ile Leu Asp Tyr Gln Asp Pro
 705 710 715 720
 Ile Asp Pro Ala Ser Thr Val Ile Ile Ile Arg Ser Leu Val Pro Gly
 725 730 735
 Gly Ile Ala Glu Lys Asp Gly Arg Leu Leu Pro Gly Asp Arg Leu Met
 740 745 750
 Phe Val Asn Asp Val Asn Leu Glu Asn Ser Ser Leu Glu Glu Ala Val
 755 760 765
 Glu Ala Leu Lys Gly Ala Pro Ser Gly Thr Val Arg Ile Gly Val Ala
 770 775 780
 Lys Pro Leu Pro Leu Ser Pro Glu Glu Gly Tyr Val Ser Ala Lys Glu
 785 790 795 800
 Asp Ser Phe Leu Tyr Pro Pro His Ser Cys Glu Glu Ala Gly Leu Ala
 805 810 815
 Asp Lys Pro Leu Phe Arg Ala Asp Leu Ala Leu Val Gly Thr Asn Asp
 820 825 830

Ala Asp Leu Val Asp Glu Ser Thr Phe Glu Ser Pro Tyr Ser Pro Glu
 835 840 845
 Asn Asp Ser Ile Tyr Ser Thr Gln Ala Ser Ile Leu Ser Leu His Gly
 850 855 860
 Ser Ser Cys Gly Asp Gly Leu Asn Tyr Gly Ser Ser Leu Pro Ser Ser
 865 870 875 880
 Pro Pro Lys Asp Val Ile Glu Asn Ser Cys Asp Pro Val Leu Asp Leu
 885 890 895
 His Met Ser Leu Glu Leu Tyr Thr Gln Asn Leu Leu Glu Arg Gln
 900 905 910
 Asp Glu Asn Thr Pro Ser Val Asp Ile Ser Met Gly Pro Ala Ser Gly
 915 920 925
 Phe Thr Ile Asn Asp Tyr Thr Pro Ala Asn Ala Ile Glu Gln Gln Tyr
 930 935 940
 Glu Cys Glu Asn Thr Ile Val Trp Thr Glu Ser His Leu Pro Ser Glu
 945 950 955 960
 Val Ile Ser Ser Ala Glu Leu Pro Ser Val Leu Pro Asp Ser Ala Gly
 965 970 975
 Lys Gly Ser Glu Tyr Leu Leu Glu Gln Ser Ser Leu Ala Cys Asn Ala
 980 985 990
 Glu Cys Val Met Leu Gln Asn Val Ser Lys Glu Ser Phe Glu Arg Thr
 995 1000 1005
 Ile Asn Ile Ala Lys Gly Asn Ser Ser Leu Gly Met Thr Val Ser Ala
 1010 1015 1020
 Asn Lys Asp Gly Leu Gly Met Ile Val Arg Ser Ile Ile His Gly Gly
 1025 1030 1035 1040
 Ala Ile Ser Arg Asp Gly Arg Ile Ala Ile Gly Asp Cys Ile Leu Ser
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 Ile Asn Glu Glu Ser Thr Ile Ser Val Thr Asn Ala Gln Ala Arg Ala
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 Met Leu Arg Arg His Ser Leu Ile Gly Pro Asp Ile Lys Ile Thr Tyr
 1075 1080 1085
 Val Pro Ala Glu His Leu Glu Glu Phe Lys Ile Ser Leu Gly Gln Gln
 1090 1095 1100
 Ser Gly Arg Val Met Ala Leu Asp Ile Phe Ser Ser Tyr Thr Gly Arg
 1105 1110 1115 1120
 Asp Ile Pro Glu Leu Pro Glu Arg Glu Glu Gly Glu Glu Ser
 1125 1130 1135
 Glu Leu Gln Asn Thr Ala Tyr Ser Asn Trp Asn Gln Pro Arg Arg Val
 1140 1145 1150
 Glu Leu Trp Arg Glu Pro Ser Lys Ser Leu Gly Ile Ser Ile Val Gly
 1155 1160 1165
 Gly Arg Gly Met Gly Ser Arg Leu Ser Asn Gly Glu Val Met Arg Gly
 1170 1175 1180
 Ile Phe Ile Lys His Val Leu Glu Asp Arg Pro Ala Gly Lys Asn Gly
 1185 1190 1195 1200
 Thr Leu Lys Pro Gly Asp Arg Ile Val Glu Val Asp Gly Met Asp Leu
 1205 1210 1215
 Arg Asp Ala Ser His Glu Gln Ala Val Glu Ala Ile Arg Lys Ala Gly
 1220 1225 1230
 Asn Pro Val Val Phe Met Val Gln Ser Ile Ile Asn Arg Pro Arg Lys
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 Ser Ser Thr Asn Pro Phe Ala Asp Ser Leu Gln Ile Asn Ala Asp Lys
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 Ala Pro Ser Gln Ser Glu Ser Glu Pro Glu Lys Ala Pro Leu Cys Ser
 1285 1290 1295
 Val Pro Pro Pro Pro Ser Ala Phe Ala Glu Met Gly Ser Asp His
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 Thr Gln Ser Ser Ala Ser Lys Ile Ser Gln Asp Val Asp Lys Glu Asp
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Glu Phe Gly Tyr Ser Trp Lys Asn Ile Arg Glu Arg Tyr Gly Thr Leu
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 Thr Gly Glu Leu His Met Ile Glu Leu Glu Lys Gly His Ser Gly Leu
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 Gly Leu Ser Leu Ala Gly Asn Lys Asp Arg Ser Arg Met Ser Val Phe
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 Ile Val Gly Ile Asp Pro Asn Gly Ala Ala Gly Lys Asp Gly Arg Leu
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 Gln Ile Ala Asp Glu Leu Leu Glu Ile Asn Gly Gln Ile Leu Tyr Gly
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 Arg Ser His Gln Asn Ala Ser Ser Ile Ile Lys Cys Ala Pro Ser Lys
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 Val Lys Ile Ile Phe Ile Arg Asn Lys Asp Ala Val Asn Gln Met Ala
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 Val Cys Pro Gly Asn Ala Val Glu Pro Leu Pro Ser Asn Ser Glu Asn
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 Leu Gln Asn Lys Glu Thr Glu Pro Thr Val Thr Ser Asp Ala Ala
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 Val Asp Leu Ser Ser Phe Lys Asn Val Gln His Leu Glu Leu Pro Lys
 1475 1480 1485
 Asp Gln Gly Gly Leu Gly Ile Ala Ile Ser Glu Glu Asp Thr Leu Ser
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 Gly Val Ile Ile Lys Ser Leu Thr Glu His Gly Val Ala Ala Thr Asp
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 Gly Arg Leu Lys Val Gly Asp Gln Ile Leu Ala Val Asp Asp Glu Ile
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 Lys Met Thr Val Lys Leu Thr Ile His Ala Glu Asn Pro Asp Ser Gln
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 Ala Val Pro Ser Ala Ala Gly Ala Ala Ser Gly Glu Lys Lys Asn Ser
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 Pro Ala Thr Cys Pro Ile Ile Pro Gly Cys Glu Thr Thr Ile Glu Ile
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 Ser Lys Gly Arg Thr Gly Leu Gly Leu Ser Ile Val Gly Gly Ser Asp
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 Ala Cys Lys Asp Gly Arg Leu Trp Ala Gly Asp Gln Ile Leu Glu Val
 1665 1670 1675 1680
 Asn Gly Ile Asp Leu Arg Lys Ala Thr His Asp Glu Ala Ile Asn Val
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 Leu Arg Gln Thr Pro Gln Arg Val Arg Leu Thr Leu Tyr Arg Asp Glu
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 Ala Pro Tyr Lys Glu Glu Val Cys Asp Thr Leu Thr Ile Glu Leu
 1715 1720 1725
 Gln Lys Lys Pro Gly Lys Gly Leu Gly Leu Ser Ile Val Gly Lys Arg
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 Asn Asp Thr Gly Val Phe Val Ser Asp Ile Val Lys Gly Gly Ile Ala
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 Asp Pro Asp Gly Arg Leu Ile Gln Gly Asp Gln Ile Leu Leu Val Asn
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 Gly Glu Asp Val Arg Asn Ala Ser Gln Glu Ala Val Ala Leu Leu
 1780 1785 1790
 Lys Cys Ser Leu Gly Thr Val Thr Leu Glu Val Gly Arg Ile Lys Ala
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 Gly Pro Phe His Ser Glu Arg Arg Pro Ser Gln Thr Ser Gln Val Ser
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Glu Gly Ser Leu Ser Ser Phe Thr Phe Pro Leu Ser Gly Ser Ser Thr
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 Ser Glu Ser Leu Glu Ser Ser Ser Lys Lys Asn Ala Leu Ala Ser Glu
 1845 1850 1855
 Ile Gln Gly Leu Arg Thr Val Glu Met Lys Lys Gly Pro Thr Asp Ser
 1860 1865 1870
 Leu Gly Ile Ser Ile Ala Gly Gly Val Gly Ser Pro Leu Gly Asp Val
 1875 1880 1885
 Pro Ile Phe Ile Ala Met Met His Pro Thr Gly Val Ala Ala Gln Thr
 1890 1895 1900
 Gln Lys Leu Arg Val Gly Asp Arg Ile Val Thr Ile Cys Gly Thr Ser
 1905 1910 1915 1920
 Thr Glu Gly Met Thr His Thr Gln Ala Val Asn Leu Leu Lys Asn Ala
 1925 1930 1935
 Ser Gly Ser Ile Glu Met Gln Val Val Ala Gly Gly Asp Val Ser Val
 1940 1945 1950
 Val Thr Gly His His Gln Glu Pro Ala Ser Ser Ser Leu Ser Phe Thr
 1955 1960 1965
 Gly Leu Thr Ser Thr Ser Ile Phe Gln Asp Asp Leu Gly Pro Pro Gln
 1970 1975 1980
 Cys Lys Ser Ile Thr Leu Glu Arg Gly Pro Asp Gly Leu Gly Phe Ser
 1985 1990 1995 2000
 Ile Val Gly Gly Tyr Gly Ser Pro His Gly Asp Leu Pro Ile Tyr Val
 2005 2010 2015
 Lys Thr Val Phe Ala Lys Gly Ala Ala Ser Glu Asp Gly Arg Leu Lys
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 Arg Gly Asp Gln Ile Ile Ala Val Asn Gly Gln Ser Leu Glu Gly Val
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 35 40 45
 Leu Ser Leu Gln Thr Ser Val Gln Gln Leu Lys Asp Gln Val Asn Ile
 50 55 60
 Ala Thr Ser Ala Thr Ser Asn Ile Glu Tyr Ala His Val Pro His Leu
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 Ser Pro Ala Val Ile Pro Thr Leu Gln Asn Glu Ser Phe Leu Leu Ser
 85 90 95
 Pro Asn Asn Gly Asn Leu Glu Ala Leu Thr Gly Pro Gly Ile Pro His
 100 105 110
 Ile Asn Gly Lys Pro Ala Cys Asp Glu Phe Asp Gln Leu Ile Lys Asn
 115 120 125
 Met Ala Gln Gly Arg His Val Glu Val Phe Glu Leu Leu Lys Pro Pro
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 145 150 155 160
 Gly Glu Leu Gly Ile Phe Val Gln Glu Ile Gln Glu Gly Ser Val Ala
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His Arg Asp Gly Arg Leu Lys Glu Thr Asp Gln Ile Leu Ala Ile Asn
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 Gly Gln Ala Leu Asp Gln Thr Ile Thr His Gln Gln Ala Ile Ser Ile
 195 200 205
 Leu Gln Lys Ala Lys Asp Thr Val Gln Leu Val Ile Ala Arg Gly Ser
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 Leu Pro Gln Leu Val Ser Pro Ile Val Ser Arg Ser Pro Ser Ala Ala
 225 230 235 240
 Ser Thr Ile Ser Ala His Ser Asn Pro Val His Trp Gln His Met Glu
 245 250 255
 Thr Ile Glu Leu Val Asn Asp Gly Ser Gly Leu Gly Phe Gly Ile Ile
 260 265 270
 Gly Gly Lys Ala Thr Gly Val Ile Val Lys Thr Ile Leu Pro Gly Gly
 275 280 285
 Val Ala Asp Gln His Gly Arg Leu Cys Ser Gly Asp His Ile Leu Lys
 290 295 300
 Ile Gly Asp Thr Asp Leu Ala Gly Met Ser Ser Glu Gln Val Ala Gln
 305 310 315 320
 Val Leu Arg Gln Cys Gly Asn Arg Val Lys Leu Met Ile Ala Arg Ser
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 Ala Ile Glu Glu Arg Thr Ala Pro Thr Ala Leu Gly Ile Thr Leu Ser
 340 345 350
 Ser Ser Pro Thr Ser Thr Pro Glu Leu Arg Val Asp Ala Ser Thr Gln
 355 360 365
 Lys Gly Glu Glu Ser Glu Thr Phe Asp Val Glu Leu Thr Lys Asn Val
 370 375 380
 Gln Gly Leu Gly Ile Thr Ile Ala Gly Tyr Ile Gly Asp Lys Lys Leu
 385 390 395 400
 Glu Pro Ser Gly Ile Phe Val Lys Ser Ile Thr Lys Ser Ser Ala Val
 405 410 415
 Glu His Asp Gly Arg Ile Gln Ile Gly Asp Gln Ile Ile Ala Val Asp
 420 425 430
 Gly Thr Asn Leu Gln Gly Phe Thr Asn Gln Gln Ala Val Glu Val Leu
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 Arg His Thr Gly Gln Thr Val Leu Leu Thr Leu Met Arg Arg Gly Met
 450 455 460
 Lys Gln Glu Ala Glu Leu Met Ser Arg Glu Asp Val Thr Lys Asp Ala
 465 470 475 480
 Asp Leu Ser Pro Val Asn Ala Ser Ile Ile Lys Glu Asn Tyr Glu Lys
 485 490 495
 Asp Glu Asp Phe Leu Ser Ser Thr Arg Asn Thr Asn Ile Leu Pro Thr
 500 505 510
 Glu Glu Glu Gly Tyr Pro Leu Leu Ser Ala Glu Ile Glu Glu Ile Glu
 515 520 525
 Asp Ala Gln Lys Gln Glu Ala Ala Leu Leu Thr Lys Trp Gln Arg Ile
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 Met Gly Ile Asn Tyr Glu Ile Val Val Ala His Val Ser Lys Phe Ser
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 Glu Asn Ser Gly Leu Gly Ile Ser Leu Glu Ala Thr Val Gly His His
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 Phe Ile Arg Ser Val Leu Pro Glu Gly Pro Val Gly His Ser Gly Lys
 580 585 590
 Leu Phe Ser Gly Asp Glu Leu Leu Glu Val Asn Gly Ile Thr Leu Leu
 595 600 605
 Gly Glu Asn His Gln Asp Val Val Asn Ile Leu Lys Glu Leu Pro Ile
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 Glu Val Thr Met Val Cys Cys Arg Arg Thr Val Pro Pro Thr Thr Gln
 625 630 635 640
 Ser Glu Leu Asp Ser Leu Asp Leu Cys Asp Ile Glu Leu Thr Glu Lys
 645 650 655
 Pro His Val Asp Leu Gly Glu Phe Ile Gly Ser Ser Glu Pro Glu Asp
 660 665 670

Pro Val Leu Ala Met Thr Asp Ala Gly Gln Ser Thr Glu Glu Val Gln
 675 680 685
 Ala Pro Leu Ala Met Trp Glu Ala Gly Ile Gln His Ile Met Leu Glu
 690 695 700
 Lys Gly Ser Lys Gly Leu Gly Phe Ser Ile Leu Asp Tyr Gln Asp Pro
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 Gly Ile Ala Glu Lys Asp Gly Arg Leu Leu Pro Gly Asp Arg Leu Met
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 Phe Val Asn Asp Val Asn Leu Glu Asn Ser Ser Leu Glu Glu Ala Val
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 Glu Ala Leu Lys Gly Ala Pro Ser Gly Thr Val Arg Ile Gly Val Ala
 770 775 780
 Lys Pro Leu Pro Leu Ser Pro Glu Glu Gly Tyr Val Ser Ala Lys Glu
 785 790 795 800
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 Asp Lys Pro Leu Phe Arg Ala Asp Leu Ala Leu Val Gly Thr Asn Asp
 820 825 830
 Ala Asp Leu Val Asp Glu Ser Thr Phe Glu Ser Pro Tyr Ser Pro Glu
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 Asn Asp Ser Ile Tyr Ser Thr Gln Ala Ser Ile Leu Ser Leu His Gly
 850 855 860
 Ser Ser Cys Gly Asp Gly Leu Asn Tyr Gly Ser Ser Leu Pro Ser Ser
 865 870 875 880
 Pro Pro Lys Asp Val Ile Glu Asn Ser Cys Asp Pro Val Leu Asp Leu
 885 890 895
 His Met Ser Leu Glu Glu Leu Tyr Thr Gln Asn Leu Leu Glu Arg Gln
 900 905 910
 Asp Glu Asn Thr Pro Ser Val Asp Ile Ser Met Gly Pro Ala Ser Gly
 915 920 925
 Phe Thr Ile Asn Asp Tyr Thr Pro Ala Asn Ala Ile Glu Gln Gln Tyr
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 Glu Cys Glu Asn Thr Ile Val Trp Thr Glu Ser His Leu Pro Ser Glu
 945 950 955 960
 Val Ile Ser Ser Ala Glu Leu Pro Ser Val Leu Pro Asp Ser Ala Gly
 965 970 975
 Lys Gly Ser Glu His Leu Leu Glu Gln Ser Ser Leu Ala Cys Asn Ala
 980 985 990
 Glu Cys Val Met Leu Gln Asn Val Ser Lys Glu Ser Phe Glu Arg Thr
 995 1000 1005
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 1010 1015 1020
 Asn Lys Asp Gly Leu Gly Met Ile Val Arg Ser Ile Ile His Gly Gly
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 Val Pro Ala Glu His Leu Glu Glu Phe Lys Ile Ser Leu Gly Gln Gln
 1090 1095 1100
 Ser Gly Arg Val Met Ala Leu Asp Ile Phe Ser Ser Tyr Thr Gly Arg
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 Asp Ile Pro Glu Leu Pro Glu Arg Glu Glu Gly Glu Glu Ser
 1125 1130 1135
 Glu Leu Gln Asn Thr Ala Tyr Ser Asn Trp Asn Gln Pro Arg Arg Val
 1140 1145 1150
 Glu Leu Trp Arg Glu Pro Ser Lys Ser Leu Gly Ile Ser Ile Val Gly
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Gly Arg Gly Met Gly Ser Arg Leu Ser Asn Gly Glu Val Met Arg Gly
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 Ile Phe Ile Lys His Val Leu Glu Asp Ser Pro Ala Gly Lys Asn Gly
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 Thr Leu Lys Pro Gly Asp Arg Ile Val Glu Val Asp Gly Met Asp Leu
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 Met Leu Glu Ala Ile Asp Lys Asn Arg Ala Leu His Ala
 1 5 10

gca gag cgc ttg caa acc aag ctg cga gaa cgt ggg gat gta gca aat 157
 Ala Glu Arg Leu Gln Thr Lys Leu Arg Glu Arg Gly Asp Val Ala Asn
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gaa gac aaa ctg agc ctt ctg aag tca gtc ctg cag agc cct ctc ttc 205
 Glu Asp Lys Leu Ser Leu Leu Lys Ser Val Leu Gln Ser Pro Leu Phe
 30 35 40 45

agt cag att ctg agc ctt cag act tct gta cag cag ctg aaa gac cag 253
 Ser Gln Ile Leu Ser Leu Gln Thr Ser Val Gln Gln Leu Lys Asp Gln
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gta aat att gca act tca gca act tca aat att gaa tat gcc cac gtt 301
 Val Asn Ile Ala Thr Ser Ala Thr Ser Asn Ile Glu Tyr Ala His Val
 65 70 75

cct cat ctc agc cca gct gtg att cct act ctg caa aat gaa tcg ttt 349
 Pro His Leu Ser Pro Ala Val Ile Pro Thr Leu Gln Asn Glu Ser Phe
 80 85 90

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 Leu Leu Ser Pro Asn Asn Gly Asn Leu Glu Ala Leu Thr Gly Pro Gly
 95 100 105

att cca cac att aat ggg aaa cct gct tgt gat gaa ttt gat cag ctt 445
 Ile Pro His Ile Asn Gly Lys Pro Ala Cys Asp Glu Phe Asp Gln Leu
 110 115 120 125

atc aaa aat atg gcc cag ggt cgc cat gta gaa gtt ttt gag ctc ctc 493
 Ile Lys Asn Met Ala Gln Gly Arg His Val Glu Val Phe Glu Leu Leu
 130 135 140

aaa cct cca tct gga ggc ctt ggg ttt agt gtt gtg gga cta aga agt 541
 Lys Pro Pro Ser Gly Gly Leu Gly Phe Ser Val Val Gly Leu Arg Ser
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cac atg gaa acg att gaa ttg gtg aat gat gga tct ggt ttg gga ttt His Met Glu Thr Ile Glu Leu Val Asn Asp Gly Ser Gly Leu Gly Phe 255 260 265	877
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gca aga agt gcc ata gaa gaa cgt aca gca ccc act gct ttg ggc atc Ala Arg Ser Ala Ile Glu Glu Arg Thr Ala Pro Thr Ala Leu Gly Ile 335 340 345	1117
acc ctc tcc tca tcc cca act tca acg cca gag ttg cgg gtt gat gct Thr Leu Ser Ser Pro Thr Ser Thr Pro Glu Leu Arg Val Asp Ala 350 355 360 365	1165
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640 645 650	
aca gaa aag cct cac gta gat cta ggt gag ttc atc ggg tca tca gag	2077
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Pro Glu Asp Pro Val Leu Ala Met Thr Asp Ala Gly Gln Ser Thr Glu	
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Gln Asp Pro Ile Asp Pro Ala Ser Thr Val Ile Ile Arg Ser Leu	
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815 820 825	
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Thr Asn Asp Ala Asp Leu Val Asp Glu Ser Thr Phe Glu Ser Pro Tyr	
830 835 840 845	
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Ser Pro Glu Asn Asp Ser Ile Tyr Ser Thr Gln Ala Ser Ile Leu Ser	
850 855 860	
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Leu His Gly Ser Ser Cys Gly Asp Gly Leu Asn Tyr Gly Ser Ser Leu	
865 870 875	

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caa caa tat gaa tgt gaa aac aca ata gtg tgg act gaa tct cat tta Gln Gln Tyr Glu Cys Glu Asn Thr Ile Val Trp Thr Glu Ser His Leu 945 950 955	2941
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cat gga ggt gcc att agt cga gat ggc cgg att gcc att ggg gac tgc His Gly Gly Ala Ile Ser Arg Asp Gly Arg Ile Ala Ile Gly Asp Cys 1040 1045 1050	3229
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gga caa caa tct gga aga gta atg gca ctg gat att ttt tct tca tac Gly Gln Gln Ser Gly Arg Val Met Ala Leu Asp Ile Phe Ser Ser Tyr 1105 1110 1115	3421
act ggc aga gac att cca gaa tta cca gag cga gaa gag gga gag ggt Thr Gly Arg Asp Ile Pro Glu Leu Pro Glu Arg Glu Glu Gly Glu Gly 1120 1125 1130	3469
gaa gaa agc gaa ctt caa aac aca gca tat agc aat tgg aat cag ccc Glu Glu Ser Glu Leu Gln Asn Thr Ala Tyr Ser Asn Trp Asn Gln Pro 1135 1140 1145	3517
agg cgg gtg gaa ctc tgg aga gaa cca agc aaa tcc tta ggc atc agc Arg Arg Val Glu Leu Trp Arg Glu Pro Ser Lys Ser Leu Gly Ile Ser 1150 1155 1160 1165	3565
att gtt ggt gga cga ggg atg ggg agt cgg cta agc aat gga gaa gtg Ile Val Gly Gly Arg Gly Met Gly Ser Arg Leu Ser Asn Gly Glu Val 1170 1175 1180	3613
atg agg ggc att ttc atc aaa cat gtt ctg gaa gat agt cca gct ggc Met Arg Gly Ile Phe Ile Lys His Val Leu Glu Asp Ser Pro Ala Gly 1185 1190 1195	3661

aaa aat gga acc ttg aaa cct gga gat aga atc gta gag gtg gat gga	3709
Lys Asn Gly Thr Leu Lys Pro Gly Asp Arg Ile Val Glu Val Asp Gly	
1200 1205 1210	
atg gac ctc aga gat gca agc cat gaa caa gct gtg gaa gcc att cg	3757
Met Asp Leu Arg Asp Ala Ser His Glu Gln Ala Val Glu Ala Ile Arg	
1215 1220 1225	
aaa gca ggc aac cct gta gtc ttt atg gta tagagctta ttacagacca	3807
Lys Ala Gly Asn Pro Val Val Phe Met Val	
1230 1235	
agggcaccca gtcagtcagt cagagtcaga gtcagagtca gagccagaga aggtccatt	3867
gtgcagtgcc ccccccacccc ctccttcagc ctttgcggaa atgggtatgt atcacacaca	3927
gtcatctgca agaaaaatct cacaagatgt ggacaaagag gatgatgtt gttacagctg	3987
gaaaaatatac agagagcgtt atggAACCTT aacaggcgag ctgcataatgtt ttgactggaa	4047
gaaaggctat agtgggttgg gcctaagtct tgctgggaa aagacccat ccaggatgg	4107
tgtcttcata gtggggattt atccaaatgg agctgcagaa aagatggc gattgcaat	4167
tgcagatgag cttagaga tcaatggc gatTTTATAT ggaagaagtc atcagaatgc	4227
ctcatcaatc attaaatgtt ccccttctaa agtgaaaata attttatca gaaataaaga	4287
tgcagtgaaat cagatggccg tatgtcctgg aatgcagta gAACCTTGC cttctaaactc	4347
agaaaaatctt caaaataaagg agacagagcc aactgttact acttctgtat cagctgtgg	4407
cctcaggatca ttaaaaatgtt tgcaacatct ggagcttccc aaggatcagg ggggttgg	4467
tattgtatc agcgaagaag atacactcg tggagtcatc ataaagagct taacagagca	4527
tgggttagca gccacggatg gacgactcaa agtcggagat cagatactgg ctgttagatga	4587
tgaaattgtt gtgggttacc ctattaaaaa gtttattagc cttctgaaga cagcaagat	4647
gacagtaaaa ctaccatcc atgctgagaa tccagattcc caggctgttc ttctcaggatc	4707
tggtgccagcc agtggagaaaaaaaacacag ctcccagttct ctgtatgttcc caccatgttgc	4767
ctccccagaa cccgagtcata ccgaaataac aagcagatca tcaacaccag caattttgc	4827
ttctgtatct gcaacctgccc ccattatccc tggctgcggaa acaaccatcg agatttccaa	4887
agggcgaaca gggctgggccc tgagcatcg tgggggttca gacacgtgc tgggtgcctt	4947
tattatccat gaagtttatg aagaaggagc agatgtaaa gatgaaagac tctggcttgg	5007
agatcagatc tttagggtga atggaatttgc cttggaggaag gcccacatg atgaagcaat	5067
caatgtcctg agacagacgc cacagagat ggcctgtaca ctctcagag atgaggcccc	5127
atacaaagag gaggaagtgt gtgacaccct cactatttagt ctgcagaaga agccggggaaa	5187
aggcctagga ttaagtattt ttggaaaaa aacgataact ggagatatttgc tgcagacat	5247
tgtcaaagga ggaatttgcag atcccattttt aagactgtatc caggagagacc agatattatt	5307
ggtaatggg gaagacgttc gtaatgcctc ccaagaagcg gttccgcctt tgctaaagtgc	5367
ttcccttaggc acagtaacct tggaaattttt aagaatcaaa gctggccat tccattcaga	5427
gaggagccca tctcaaaccat gccaggttag tgaaggcagc ctgttcttt tcactttcc	5487
actctctggc tccagttatc ctgagtcact gaaaggatgc tcaaaagaaga atgcatttggc	5547
atctgaaata caggattaa gaacagtcga aatgaaaaaa gcccacttg actcactggg	5607
aatcagatc gctggaggag taggcagccc acttgggtat gtgcctatat ttattgcaat	5667
gatgcaccca actggaggatc cagcacagac caaaaaactc agagggtggg ataggatgt	5727
caccatctgt ggcacatcca ctgagggtatc gactcacacc caagcagttt acctactgaa	5787
aaatgcatct ggctccattt aatgcaggt gttgtctgaa ggagacgtga gtgtggtcac	5847
aggtcatcat caggagctg caagttccat tctttttttt actggctgaa atctggctga	5907
tatatttcag gatgatatttgc gacccctca atgtaaatgtt attacactatg acctactgaa	5967
agatggctta ggcttcagta tagttggagg atatggcagc ctcatggag cgtcaaccag	6027
ttatgtaaa acagtgtttt gaaaggagc agctctgtt gacggacgtc tgaaaagggg	6087
cgatcagatc attgtgtca atggcagat ctttagaagaa gtcacccatg aagaagctgt	6147
tgccatctt aaacggacaa aaggcactgt cactttgtat gttctctttt gatgggtctg	6207
ccagaattga accaaccatca cccctagctc acctcttact gtaaagagaa tgcactgtc	6267
ctgacaattt ttatgtgtt gtcagccggg tcttcaaaatc ttttaggggg aataaacact	6327
taagtttctt ttctcatct agaaatgtttt tccttacttca caacctaaca tcattttct	6387
tttctcttgc cattttgttgc acttaaagag aaggaatatt ttttaggttgc aatctcggtt	6447
ttatgttgg agatatctaa tgttttgtat tcacatggc aagaattatt acatgtctaa	6507
ctggtagta taaagaaaaga taattctaaa gtaaccaaa gaaaatggct tcaagtaatgtt	6567
aggatggaaa atgaaaatataaaaataaaaga agaaaatctc gggagttt aaaaaatgc	6627
ctcaatttgg caatctaccccttccca ccccaacttca	6666

<210> 88
 <211> 763
 <212> PRT
 <213> Homo sapiens

<400> 88
 Met Gly Ser Asn His Thr Gln Ser Ser Ala Ser Lys Ile Ser Gln Asp
 1 5 10 15
 Val Asp Lys Glu Asp Glu Phe Gly Tyr Ser Trp Lys Asn Ile Arg Glu
 20 25 30
 Arg Tyr Gly Thr Leu Thr Gly Glu Leu His Met Ile Glu Leu Glu Lys
 35 40 45
 Gly His Ser Gly Leu Gly Leu Ser Leu Ala Gly Asn Lys Asp Arg Ser
 50 55 60
 Arg Met Ser Val Phe Ile Val Gly Ile Asp Pro Asn Gly Ala Ala Gly
 65 70 75 80
 Lys Asp Gly Arg Leu Gln Ile Ala Asp Glu Leu Leu Glu Ile Asn Gly
 85 90 95
 Gln Ile Leu Tyr Gly Arg Ser His Gln Asn Ala Ser Ser Ile Ile Lys
 100 105 110
 Cys Ala Pro Ser Lys Val Lys Ile Ile Phe Ile Arg Asn Lys Asp Ala
 115 120 125
 Val Asn Gln Met Ala Val Cys Pro Gly Asn Ala Val Glu Pro Leu Pro
 130 135 140
 Ser Asn Ser Glu Asn Leu Gln Asn Lys Glu Pro Glu Pro Thr Val Thr
 145 150 155 160
 Thr Ser Asp Ala Ala Val Asp Leu Ser Ser Phe Lys Asn Val Gln His
 165 170 175
 Leu Glu Leu Pro Lys Asp Gln Gly Gly Leu Gly Ile Ala Ile Ser Glu
 180 185 190
 Glu Asp Thr Leu Ser Gly Val Ile Ile Lys Ser Leu Thr Glu His Gly
 195 200 205
 Val Ala Ala Thr Asp Gly Arg Leu Lys Val Gly Asp Gln Ile Leu Ala
 210 215 220
 Val Asp Asp Glu Ile Val Val Gly Tyr Pro Ile Glu Lys Phe Ile Ser
 225 230 235 240
 Leu Leu Lys Thr Ala Lys Met Thr Val Lys Leu Thr Ile His Ala Glu
 245 250 255
 Asn Pro Asp Ser Gln Ala Val Pro Ser Ala Ala Gly Ala Ser Gly
 260 265 270
 Glu Lys Lys Asn Ser Ser Gln Ser Leu Met Val Pro Gln Ser Gly Ser
 275 280 285
 Pro Glu Pro Glu Ser Ile Arg Asn Thr Ser Arg Ser Ser Thr Pro Ala
 290 295 300
 Ile Phe Ala Ser Asp Pro Ala Thr Cys Pro Ile Ile Pro Gly Cys Glu
 305 310 315 320
 Thr Thr Ile Glu Ile Ser Lys Gly Arg Thr Gly Leu Gly Leu Ser Ile
 325 330 335
 Val Gly Gly Ser Asp Thr Leu Leu Gly Ala Phe Ile Ile His Glu Val
 340 345 350
 Tyr Glu Glu Gly Ala Ala Cys Lys Asp Gly Arg Leu Trp Ala Gly Asp
 355 360 365
 Gln Ile Leu Glu Val Asn Gly Ile Asp Leu Arg Lys Ala Thr His Asp
 370 375 380
 Glu Ala Ile Asn Val Leu Arg Gln Thr Pro Gln Arg Val Arg Leu Thr
 385 390 395 400
 Leu Tyr Arg Asp Glu Ala Pro Tyr Lys Glu Glu Val Cys Asp Thr
 405 410 415
 Leu Thr Ile Glu Leu Gln Lys Lys Pro Gly Lys Gly Leu Gly Leu Ser
 420 425 430
 Ile Val Gly Lys Arg Asn Asp Thr Gly Val Phe Val Ser Asp Ile Val
 435 440 445

Lys Gly Gly Ile Ala Asp Pro Asp Gly Arg Leu Ile Gln Gly Asp Gln
 450 455 460
 Ile Leu Leu Val Asn Gly Glu Asp Val Arg Asn Ala Ser Gln Glu Ala
 465 470 475 480
 Val Ala Ala Leu Leu Lys Cys Ser Leu Gly Thr Val Thr Leu Glu Val
 485 490 495
 Gly Arg Ile Lys Ala Gly Pro Phe His Ser Glu Arg Arg Pro Ser Gln
 500 505 510
 Thr Ser Gln Val Ser Glu Gly Ser Leu Ser Ser Phe Thr Phe Pro Leu
 515 520 525
 Ser Gly Ser Ser Thr Ser Glu Ser Leu Glu Ser Ser Ser Lys Lys Asn
 530 535 540
 Ala Leu Ala Ser Glu Ile Gln Gly Leu Arg Thr Val Glu Met Lys Lys
 545 550 555 560
 Gly Pro Thr Asp Ser Leu Gly Ile Ser Ile Ala Gly Gly Val Gly Ser
 565 570 575
 Pro Leu Gly Asp Val Pro Ile Phe Ile Ala Met Met His Pro Thr Gly
 580 585 590
 Val Ala Ala Gln Thr Gln Lys Leu Arg Val Gly Asp Arg Ile Val Thr
 595 600 605
 Ile Cys Gly Thr Ser Thr Glu Gly Met Thr His Thr Gln Ala Val Asn
 610 615 620
 Leu Leu Lys Asn Ala Ser Gly Ser Ile Glu Met Gln Val Val Ala Gly
 625 630 635 640
 Gly Asp Val Ser Val Val Thr Gly His His Gln Glu Pro Ala Ser Ser
 645 650 655
 Ser Leu Ser Phe Thr Gly Leu Thr Ser Thr Ser Ile Phe Gln Asp Asp
 660 665 670
 Leu Gly Pro Pro Gln Cys Lys Ser Ile Thr Leu Glu Arg Gly Pro Asp
 675 680 685
 Gly Leu Gly Phe Ser Ile Val Gly Gly Tyr Gly Ser Pro His Gly Asp
 690 695 700
 Leu Pro Ile Tyr Val Lys Thr Val Phe Ala Lys Gly Ala Ala Ser Glu
 705 710 715 720
 Asp Gly Arg Leu Lys Arg Gly Asp Gln Ile Ile Ala Val Asn Gly Gln
 725 730 735
 Ser Leu Glu Gly Val Thr His Glu Glu Ala Val Ala Ile Leu Lys Arg
 740 745 750
 Thr Lys Gly Thr Val Thr Leu Met Val Leu Ser
 755 760

<210> 89
 <211> 590
 <212> PRT
 <213> Homo sapiens

<400> 89
 Ile Thr His Gln Gln Ala Ile Ser Ile Leu Gln Lys Ala Lys Asp Thr
 1 5 10 15
 Val Gln Leu Val Ile Ala Arg Gly Ser Leu Pro Gln Leu Val Ser Pro
 20 25 30
 Ile Val Ser Arg Ser Pro Ser Ala Ala Ser Thr Ile Ser Ala His Ser
 35 40 45
 Asn Pro Val His Trp Gln His Met Glu Thr Ile Glu Leu Val Asn Asp
 50 55 60
 Gly Ser Gly Leu Gly Phe Gly Ile Ile Gly Gly Lys Ala Thr Gly Val
 65 70 75 80
 Ile Val Lys Thr Ile Leu Pro Gly Gly Val Ala Asp Gln His Gly Arg
 85 90 95
 Leu Cys Ser Gly Asp His Ile Leu Lys Ile Gly Asp Thr Asp Leu Ala
 100 105 110

Gly Met Ser Ser Glu Gln Val Ala Gln Val Leu Arg Gln Cys Gly Asn
 115 120 125
 Arg Val Lys Leu Met Ile Ala Arg Ser Ala Ile Glu Glu Arg Thr Ala
 130 135 140
 Pro Thr Ala Leu Gly Ile Thr Leu Ser Ser Ser Pro Thr Ser Thr Pro
 145 150 155 160
 Glu Leu Arg Val Asp Ala Ser Thr Gln Lys Gly Glu Glu Ser Glu Thr
 165 170 175
 Phe Asp Val Glu Leu Thr Lys Asn Val Gln Gly Leu Gly Ile Thr Ile
 180 185 190
 Ala Gly Tyr Ile Gly Asp Lys Lys Leu Glu Pro Ser Gly Ile Phe Val
 195 200 205
 Lys Ser Ile Thr Lys Ser Ser Ala Val Glu His Asp Gly Arg Ile Gln
 210 215 220
 Ile Gly Asp Gln Ile Ile Ala Val Asp Gly Thr Asn Leu Gln Gly Phe
 225 230 235 240
 Thr Asn Gln Gln Ala Val Glu Val Leu Arg His Thr Gly Gln Thr Val
 245 250 255
 Leu Leu Thr Leu Met Arg Arg Gly Met Lys Gln Glu Ala Glu Leu Met
 260 265 270
 Ser Arg Glu Asp Val Thr Lys Asp Ala Asp Leu Ser Pro Val Asn Ala
 275 280 285
 Ser Ile Ile Lys Glu Asn Tyr Glu Lys Asp Glu Asp Phe Leu Ser Ser
 290 295 300
 Thr Arg Asn Thr Asn Ile Leu Pro Thr Glu Glu Glu Gly Tyr Pro Leu
 305 310 315 320
 Leu Ser Ala Glu Ile Glu Glu Ile Glu Asp Ala Gln Lys Gln Glu Ala
 325 330 335
 Ala Leu Leu Thr Lys Trp Gln Arg Ile Met Gly Ile Asn Tyr Glu Ile
 340 345 350
 Val Val Ala His Val Ser Lys Phe Ser Glu Asn Ser Gly Leu Gly Ile
 355 360 365
 Ser Leu Glu Ala Thr Val Gly His His Phe Ile Arg Ser Val Leu Pro
 370 375 380
 Glu Gly Pro Val Gly His Ser Gly Lys Leu Phe Ser Gly Asp Glu Leu
 385 390 395 400
 Leu Glu Val Asn Gly Ile Thr Leu Leu Gly Glu Asn His Gln Asp Val
 405 410 415
 Val Asn Ile Leu Lys Glu Leu Pro Ile Glu Val Thr Met Val Cys Cys
 420 425 430
 Arg Arg Thr Val Pro Pro Thr Thr Gln Ser Glu Leu Asp Ser Leu Asp
 435 440 445
 Leu Cys Asp Ile Glu Leu Thr Glu Lys Pro His Val Asp Leu Gly Glu
 450 455 460
 Phe Ile Gly Ser Ser Glu Pro Glu Asp Pro Val Leu Ala Met Thr Asp
 465 470 475 480
 Ala Gly Gln Ser Thr Glu Glu Val Gln Ala Pro Leu Ala Met Trp Glu
 485 490 495
 Ala Gly Ile Gln His Ile Met Leu Glu Lys Gly Ser Lys Gly Leu Gly
 500 505 510
 Phe Ser Ile Leu Asp Tyr Gln Asp Pro Ile Asp Pro Ala Ser Thr Val
 515 520 525
 Ile Ile Ile Arg Ser Leu Val Pro Gly Gly Ile Ala Glu Lys Asp Gly
 530 535 540
 Arg Leu Leu Pro Gly Asp Arg Leu Met Phe Val Asn Asp Val Asn Leu
 545 550 555 560
 Glu Asn Ser Ser Leu Glu Ala Val Glu Ala Leu Lys Gly Ala Pro
 565 570 575
 Ser Gly Thr Val Arg Ile Gly Val Ala Lys Pro Leu Pro Leu
 580 585 590

<210> 90
 <211> 235
 <212> PRT
 <213> Homo sapiens

<400> 90
 Met Leu Glu Ala Ile Asp Lys Asn Arg Ala Leu His Ala Ala Glu Arg
 1 5 10 15
 Leu Gln Thr Lys Leu Arg Glu Arg Gly Asp Val Ala Asn Glu Asp Lys
 20 25 30
 Leu Ser Leu Leu Lys Ser Val Leu Gln Ser Pro Leu Phe Ser Gln Ile
 35 40 45
 Leu Ser Leu Gln Thr Ser Val Gln Gln Leu Lys Asp Gln Val Asn Ile
 50 55 60
 Ala Thr Ser Ala Thr Ser Asn Ile Glu Tyr Ala His Val Pro His Leu
 65 70 75 80
 Ser Pro Ala Val Ile Pro Thr Leu Gln Asn Glu Ser Phe Leu Leu Ser
 85 90 95
 Pro Asn Asn Gly Asn Leu Glu Ala Leu Thr Gly Pro Gly Ile Pro His
 100 105 110
 Ile Asn Gly Lys Pro Ala Cys Asp Glu Phe Asp Gln Leu Ile Lys Asn
 115 120 125
 Met Ala Gln Gly Arg His Val Glu Val Phe Glu Leu Leu Lys Pro Pro
 130 135 140
 Ser Gly Gly Leu Gly Phe Ser Val Val Gly Leu Arg Ser Glu Asn Arg
 145 150 155 160
 Gly Glu Leu Gly Ile Phe Val Gln Glu Ile Gln Glu Gly Ser Val Ala
 165 170 175
 His Arg Asp Gly Arg Leu Lys Glu Thr Asp Gln Ile Leu Ala Ile Asn
 180 185 190
 Gly Gln Ala Leu Asp Gln Thr Ile Thr His Gln Gln Ala Ile Ser Ile
 195 200 205
 Leu Gln Lys Ala Lys Asp Thr Val Gln Leu Val Ile Ala Arg Gly Ser
 210 215 220
 Leu Pro Gln Leu Val Ser Pro Ile Val Ser Arg
 225 230 235

<210> 91
 <211> 251
 <212> PRT
 <213> Homo sapiens

<400> 91
 Pro Ser Val Leu Pro Asp Ser Ala Gly Lys Gly Ser Glu Tyr Leu Leu
 1 5 10 15
 Glu Gln Ser Ser Leu Ala Cys Asn Ala Glu Cys Val Met Leu Gln Asn
 20 25 30
 Val Ser Lys Glu Ser Phe Glu Arg Thr Ile Asn Ile Ala Lys Gly Asn
 35 40 45
 Ser Ser Leu Gly Met Thr Val Ser Ala Asn Lys Asp Gly Leu Gly Met
 50 55 60
 Ile Val Arg Ser Ile Ile His Gly Gly Ala Ile Ser Arg Asp Gly Arg
 65 70 75 80
 Ile Ala Ile Gly Asp Cys Ile Leu Ser Ile Asn Glu Glu Ser Thr Ile
 85 90 95
 Ser Val Thr Asn Ala Gln Ala Arg Ala Met Leu Arg Arg His Ser Leu
 100 105 110
 Ile Gly Pro Asp Ile Lys Ile Thr Tyr Val Pro Ala Glu His Leu Glu
 115 120 125
 Glu Phe Lys Ile Ser Leu Gly Gln Gln Ser Gly Arg Val Met Ala Leu
 130 135 140

Asp Ile Phe Ser Ser Tyr Thr Gly Arg Asp Ile Pro Glu Leu Pro Glu
 145 150 155 160
 Arg Glu Glu Gly Glu Gly Glu Ser Glu Leu Gln Asn Thr Ala Tyr
 165 170 175
 Ser Asn Trp Asn Gln Pro Arg Arg Val Glu Leu Trp Arg Glu Pro Ser
 180 185 190
 Lys Ser Leu Gly Ile Ser Ile Val Gly Gly Arg Gly Met Gly Ser Arg
 195 200 205
 Leu Ser Asn Gly Glu Val Met Arg Gly Ile Phe Ile Lys His Val Leu
 210 215 220
 Glu Asp Ser Pro Ala Gly Lys Asn Gly Thr Leu Lys Pro Gly Asp Arg
 225 230 235 240
 Ile Val Glu Ala Pro Ser Gln Ser Glu Ser Glu
 245 250

<210> 92
 <211> 272
 <212> PRT
 <213> Homo sapiens

<400> 92

Pro Ser Val Leu Pro Asp Ser Ala Gly Lys Gly Ser Glu Tyr Leu Leu
 1 5 10 15
 Glu Gln Ser Ser Leu Ala Cys Asn Ala Glu Cys Val Met Leu Gln Asn
 20 25 30
 Val Ser Lys Glu Ser Phe Glu Arg Thr Ile Asn Ile Ala Lys Gly Asn
 35 40 45
 Ser Ser Leu Gly Met Thr Val Ser Ala Asn Lys Asp Gly Leu Gly Met
 50 55 60
 Ile Val Arg Ser Ile Ile His Gly Gly Ala Ile Ser Arg Asp Gly Arg
 65 70 75 80
 Ile Ala Ile Gly Asp Cys Ile Leu Ser Ile Asn Glu Glu Ser Thr Ile
 85 90 95
 Ser Val Thr Asn Ala Gln Ala Arg Ala Met Leu Arg Arg His Ser Leu
 100 105 110
 Ile Gly Pro Asp Ile Lys Ile Thr Tyr Val Pro Ala Glu His Leu Glu
 115 120 125
 Glu Phe Lys Ile Ser Leu Gly Gln Gln Ser Gly Arg Val Met Ala Leu
 130 135 140
 Asp Ile Phe Ser Ser Tyr Thr Gly Arg Asp Ile Pro Glu Leu Pro Glu
 145 150 155 160
 Arg Glu Glu Gly Glu Gly Glu Ser Glu Leu Gln Asn Thr Ala Tyr
 165 170 175
 Ser Asn Trp Asn Gln Pro Arg Arg Val Glu Leu Trp Arg Glu Pro Ser
 180 185 190
 Lys Ser Leu Gly Ile Ser Ile Val Gly Gly Arg Gly Met Gly Ser Arg
 195 200 205
 Leu Ser Asn Gly Glu Val Met Arg Gly Ile Phe Ile Lys His Val Leu
 210 215 220
 Glu Asp Ser Pro Ala Gly Lys Asn Gly Thr Leu Lys Pro Gly Asp Arg
 225 230 235 240
 Ile Val Glu Val Asp Gly Met Asp Leu Arg Asp Ala Ser His Glu Gln
 245 250 255
 Ala Val Glu Ala Ile Arg Lys Ala Gly Asn Pro Val Val Phe Met Val
 260 265 270

<210> 93
 <211> 321
 <212> PRT
 <213> Homo sapiens

<400> 93
 Pro Ser Val Leu Pro Asp Ser Ala Gly Lys Gly Ser Glu Tyr Leu Leu
 1 5 10 15
 Glu Gln Ser Ser Leu Ala Cys Asn Ala Glu Cys Val Met Leu Gln Asn
 20 25 30
 Val Ser Lys Glu Ser Phe Glu Arg Thr Ile Asn Ile Ala Lys Gly Asn
 35 40 45
 Ser Ser Leu Gly Met Thr Val Ser Ala Asn Lys Asp Gly Leu Gly Met
 50 55 60
 Ile Val Arg Ser Ile Ile His Gly Gly Ala Ile Ser Arg Asp Gly Arg
 65 70 75 80
 Ile Ala Ile Gly Asp Cys Ile Leu Ser Ile Asn Glu Glu Ser Thr Ile
 85 90 95
 Ser Val Thr Asn Ala Gln Ala Arg Ala Met Leu Arg Arg His Ser Leu
 100 105 110
 Ile Gly Pro Asp Ile Lys Ile Thr Tyr Val Pro Ala Glu His Leu Glu
 115 120 125
 Glu Phe Lys Ile Ser Leu Gly Gln Gln Ser Gly Arg Val Met Ala Leu
 130 135 140
 Asp Ile Phe Ser Ser Tyr Thr Gly Arg Asp Ile Pro Glu Leu Pro Glu
 145 150 155 160
 Arg Glu Glu Gly Glu Glu Ser Glu Leu Gln Asn Thr Ala Tyr
 165 170 175
 Ser Asn Trp Asn Gln Pro Arg Arg Val Glu Leu Trp Arg Glu Pro Ser
 180 185 190
 Lys Ser Leu Gly Ile Ser Ile Val Gly Gly Arg Gly Met Gly Ser Arg
 195 200 205
 Leu Ser Asn Gly Glu Val Met Arg Gly Ile Phe Ile Lys His Val Leu
 210 215 220
 Glu Asp Ser Pro Ala Gly Lys Asn Gly Thr Leu Lys Pro Gly Asp Arg
 225 230 235 240
 Ile Val Glu Val Asp Gly Met Asp Leu Arg Asp Ala Ser His Glu Gln
 245 250 255
 Ala Val Glu Ala Ile Arg Lys Ala Gly Asn Pro Val Val Phe Met Val
 260 265 270
 Gln Ser Ile Ile Asn Arg Pro Arg Lys Ser Pro Leu Pro Ser Leu Leu
 275 280 285
 His Asn Leu Tyr Pro Lys Tyr Asn Phe Ser Ser Thr Asn Pro Phe Ala
 290 295 300
 Asp Ser Leu Gln Ile Asn Ala Asp Lys Ala Pro Ser Gln Ser Glu Ser
 305 310 315 320
 Glu